

AN INVESTIGATION INTO THE IMPACT OF GOAL-SETTING ON PRODUCTIVITY IN A SELECTED
TEAM SPORTS ENVIRONMENT

by

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submitted in accordance with of the requirements for
the degree of

MASTER OF ADMINISTRATION

in the subject

BUSINESS MANAGEMENT

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: PROFESSOR RENÉ PELLISSIER

July 2012

Abstract

The purpose of the current research was to determine whether goal-setting as motivational work theory influences productivity and the productivity measurement and enhancement system (ProMES) as a human resource intervention that provides feedback improves productivity in an Angolan female handball team after the implementation. Motivation and productivity are important to the success of a sports organisation. Goal-setting theory was formulated on the premise that conscious goals affect action. The ProMES approach offers a method for measuring action results, in other words team productivity, which takes this feature of typical team settings into account. Each participant completed a questionnaire toolkit and the results showed that when athletes are task oriented and collectivist they believe in goal-setting and productivity improves. The ProMES process itself, with its participative aspects and process of role clarifying and expectations can successfully be used within the sports industry. This research also reaffirms the relationship between motivation and productivity.

Key Terms

Goal-setting theory, productivity, ProMES, motivation, teamwork, team effectiveness and development, feedback, performance, high performance cycles, team sport.

Acknowledgments

I would like to acknowledge all those people who helped make this project a success.

First and foremost, I would like to thank my mother for her continued support and encouragement in all my endeavours. Specifically, I would like to thank Coach Paulo Jorge Pereira who helped me stay focused and Professor René Pellissier, my supervisor, for her patience, support and guidance throughout the length of my studies. Her constant support, and numerous revisions, resulted in the work submitted as this research study. In addition, I would like to thank the Clube Desportivo 1º D'Agosto (Luanda, Angola) who allowed doing this research with their team.

Specifically, appreciation is extended to my good friends Teresa Barrett, for her English revision, and Isabel Preto who helped me to understand the analysis process and the importance of attention to detail. Also, I would like to thank to Professor Robert Pritchard and Professor Anthony R. Paquin who helped me immensely on this research.

Statement of Originality

Student Number: **4613-120-5**

I declare that “AN INVESTIGATION INTO THE IMPACT OF GOAL-SETTING ON PRODUCTIVITY IN A SELECTED TS ENVIRONMENT” is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

Marco António Mexia Arraia

Date

List of Abbreviations

CFA	Confirmatory Factor Analysis
D'Agosto	Clube Desportivo 1º D'Agosto
GSISQ	Goal-setting in Sport Questionnaire
I/O	Industrial/Organisational
IG	Individual goals only
IG + TG	Combination of individual and team goals
IHF	International Handball Federation
JPCM	Jackson Psychological Collectivism Measure
KSAs	Knowledge skill and abilities
M	Mean
NSG	No specific goals
OCDE	Organization for Economic Co-operation and Development
ProMES	Productivity Measurement and Enhancement System
R&D	Research and experimental Development
SD	Standard Deviation
TEOSQ	Task and Ego-orientation in Sport Questionnaire
TG	Team goals only
TS	Team Sport

Table of Contents

Abstract.....	ii
Acknowledgments	iii
Statement of Originality.....	iv
List of Abbreviations	v
Table of Contents.....	vi
List of Figures.....	vii
List of Tables.....	viii
Chapter 1 Introduction.....	1
1.2 Relevance of the Study	6
1.3 Research Objectives	9
1.4 Research Statement	11
1.5 Research Methodology.....	11
1.6 Value added by this research.....	13
Chapter 2 Literature Review.....	14
2.1 Productivity, performance and productivity measurement	14
2.2 Motivation and Goal-setting.....	37
2.3 Productivity Measurement and Enhancement System (ProMES).....	61
Chapter 3 Research Methodology	87
3.1 Defining Research and Research Methodology	87
3.2 Social Research.....	95
3.3 Research Design	111
3.4 Summary.....	120
Chapter 4 Analysis of the Research Results	121
4.1. Introduction	121
4.2. Questionnaires	122
4.3. ProMES Intervention	143
Chapter 5 Conclusion	153
5.1 Outcome of the study	153
5.2 Limitations and Future Directions	157
References.....	159
Appendices.....	184
Appendix A – Handball: the game	184
Appendix B – Drawing the contingency.....	187
Appendix C - Task and Ego-orientation in Sport Questionnaire.....	190
Translation	192
Appendix D - Jackson Psychological Collectivism Measure	193
Translation	195
Appendix E - Goal-setting in Sport Questionnaire.....	196
Translation	202
Appendix F - Informed consent sheet.....	209
Appendix G - ProMES Technical Questions.....	210
Appendix H – GSISQ Other Data.....	217
Appendix I – Correlations – Kendall’s tau test	220

List of Figures

Figure 1- The High Performance Cycle.....	41
Figure 2 - The Basic ProMES Approach.	62
Figure 3 - The Model of Motivation.....	63
Figure 4 - Steps in the ProMES process.....	64
Figure 5 - Examples of ProMES Contingencies	70
Figure 6 - Learning through Discovery.....	87
Figure 7 - Interrelationships between Basic Research, Applied Research and Experimental Development..	90
.....	
Figure 8 - The action research cycle.....	98
Figure 9 - Meta cycle of inquiry.....	99
Figure 10- The research strategy	119
Figure 11 - The research framework.....	120
Figure 12 - D'Agosto Female Handball Team Objectives and Indicators	144
Figure 13 - Overall Effectiveness Score Graphic.....	151
Figure 14 - Goal-setting influences productivity in an Angola female handball team.....	155

List of Tables

Table 1- ProMES basic characteristics.....	9
Table 2- Examples of definitions of productivity	17
Table 3 - Examples of definitions of effectiveness and efficiency	22
Table 4 - Characteristics of (in)effective teams	32
Table 5 - The key principles of team goal-setting.....	47
Table 6 - Guidelines for successful goal-setting	53
Table 7 - S.M.A.R.T. Goals	53
Table 8 - ProMES Contingency Worksheet.....	70
Table 9 - Example Feedback Report.....	72
Table 10 - Characteristics of Quantitative and Qualitative Research	92
Table 11 - Methods of data collection in quantitative research	92
Table 12- Basic differences between quantitative and qualitative research concepts	93
Table 13 - Quantitative and qualitative research criteria	94
Table 14 - Strengths and Weaknesses of sources of evidence.....	108
Table 15 - Jackson Psychological Collectivism Measure	116
Table 16 - Summary Statistics	123
Table 17 - Reliability Statistics	123
Table 18 - Means and Standard Deviations for female Angolan handball players for Task and Ego	124
Table 19 - TEOSQ Percentiles	124
Table 20- T-Test EGO vs TASK.....	124
Table 21 - TEOSQ scores. Participant Task-oriented score & Ego-oriented score Overall orientation	125
Table 22 - Summary Statistics JPCM	125
Table 23 - JPCM Percentiles	126
Table 24 - JPCM Preference	126
Table 25 - JPCM Reliance	127
Table 26 - JPCM Concern.....	127
Table 27 - JPCM Norm Acceptance.....	128
Table 28 - JPCM Goal Priority	128
Table 29 - Athletic ability rate vs. best athletes (from Lot Lower 1 to Lot Higher 9).....	129
Table 30- Summary Statistics GSISQ.....	130
Table 31 - Summary Statistics for female Angolan handball players for Goal Frequency	131
Table 32 - Summary Statistics for female Angolan handball players for Goal Effectiveness	133
Table 33 - Summary Statistics for female Angolan handball players for Goal Commitment and Effort	133
Table 34 - Summary Statistics for female Angolan handball players on Motivating Factors.....	134
Table 35 - Summary Statistics for female Angolan handball players for Goal Difficulty	134
Table 36 - Most important correlations between questionnaires	141
Table 37 - D'Agosto Female Handball Team Objectives and Indicators	144
Table 38 - Objectives and Indicators explanation	144
Table 39 - ProMES Contingency Worksheet, Angola National Championship.....	145
Table 40 - Matches sequence and difficulty.....	148
Table 41 - Basic Productivity Data - Preparation Matches.....	148
Table 42 - Basic Productivity Data - National Championship	149
Table 43 - Indicator Match Score during National Championship.....	149
Table 44 - Effectiveness Match Score during National Championship	150

Chapter 1 Introduction

This chapter provides a brief overview of the research study and includes an introduction and background to the study including an overview of the research conducted.

1.1 Introduction

Since the Industrial Revolution, managers have focused on how to increase productivity. In the academic world, one of the first scholars to approach this concern in the early 20th century was Frederick W. Taylor (1911). His approach, labelled Scientific Management, focused on work performance. He found that managers, by their actions, could affect the productivity of workers. Ever since Taylor's proposal, many studies have focused on understanding what makes organisations (more) productive.

Finding how to improve productivity in the current environment, is a great challenge only possible to comprehend within a context of dependency between the various elements (Arraya, 2010). The manager, in order to be able to decide and act in this context, needs to have the right tools and understand that the organisation is not a perfectly controllable machine or a lifeless object. Instead an organisation is a thinking, acting being (Geus, 1998). Hence, an organisation is alive and comprises of complex interactive processes that allow it to evolve naturally and continuously, have a sense of self, have its own goals, have autonomous capacity for action and, above all, possess the adaptation for learning (Geus, op. cit).

This research is motivated by an interest in finding out how to measure and improve productivity in organisations which principal activity/product is a team sport (TS). This interest emerged from the fact that several TS such as basketball, baseball, cricket, football, handball, rugby, etc, move from amateurism to professional teams where the search for victory is essential for its longevity. Victories create a dynamic that includes: increasing the number of supporters, more spectators at the stadium, sponsors who are willing to provide greater investment, increased advertising revenue, increase in the sale of television rights and, above all, profits (Soriano, 2009). In reality, competitive sports today are a highly market-driven enterprise.

In choosing the sports industry, the researcher follows Kahn (2000:75), who compares the sports business to a "labour market laboratory". As Kahn (op. cit.:75) convincingly argues "[...] there is no research setting other than sports where we know the name, face, and life history of every production worker and supervisor in the industry. [...] These statistics are much more accurate than typical micro-data samples such as the Census or the Current Population Survey."

Even if the sports business is market oriented and a labour market laboratory, there is limited research in sports organisations, because of the managers' difficulty to understand that what is true in the management world of "typical" industries is also true in sports industry.

Production in the sports environment, as noted by Soriano (op. cit.) is decidedly different from production in most other markets. In most industries, for example, an organisation's welfare is improved when competition is eliminated. In sports, though, the elimination of competition effectively eliminates the industry. Furthermore, other organisations must not only continue to exist but also actually do better when their competitors are of relatively equal strength (Berri & Schmidt, 2006).

The objectives of all sports managers are to build teams that are stronger and better. To achieve this, they hire the best athletes and coaches they can afford, and build new sports complexes with modern facilities (Adelson, 2009), in other words they invest heavily to compete on a high level. Because of these strong investments, this research aims to broaden the debate on TS productivity using a management organisational tool: the Productivity Measurement and Enhancement System (ProMES) supported by a motivational theory (goal-setting theory).

Motivation and productivity-performance are important to the success of organisations. Motivation is an essential factor in productivity/performance and thus ties to important issues like competitive position, organisational success, job security and the quality of life of individuals (Pritchard, Weaver & Ashwood, 2011). The acceptance and use of a motivational strategy to enhance performance and productivity has come in response to vast evidence for the motivational and performance-enhancing effects in the organizational literature (Weinberg, Butt, Knight & Perritt, 2001). According to Ilgen & Shepard, (2001) performance measurement, goal-setting, feedback, work design and rewards are not only important sources of motivation for individuals but also for productivity-performance in teams. Managers and coaches have to be able to combine these interventions in order to create a sustainable environment of motivation and productivity/performance.

Goal-setting theory was formulated inductively largely on the basis of Locke & Latham (1990, 2002) empirical research conducted over nearly four decades. It is based on Ryan's (1970) premise that conscious goals affect action. A goal is the object or aim of an action, for example, to attain a specific standard of proficiency, usually within a specified time limit (Latham & Budworth, 2007).

Goal-setting is one of the most powerful techniques to increase motivation and enhance performance and productivity in a number of organisational settings such as education and business (Bar-Eli, Tenenbaum, Pie, Btsh & Almog, 1997). The consensus of goal-setting research indicates that goals are extremely effective in enhancing performance and productivity (Locke & Latham, 1990; Weinberg et al., 2001). However, there have been mixed results of goal-setting effects in athletic performance (Ward & Carnes, 2002).

Goal-setting theory was largely developed with a focus on the performance of individuals. More recent work (Iain & Duff, 2007; Wilson & Brookfield, 2009) has increasingly focused on goal-setting for teams reflecting a growing trend to focus on teams in organisations across a variety of fields. The basic principles of goal-setting for individuals and teams are very similar. For example, the foundation of successful team goal-setting remains in setting specific team performance goals of sufficient difficulty rather than easy or vague “do your best” goals (Weldon & Weingart, 1993; Wilson & Brookfield, 2009). However, goal-setting for teams differs from individual goal-setting in at least two important ways:

- i) By definition, teams are characterised by interdependence among members that needs to be taken into account when setting goals; and
- ii) Teams offer the potential for setting goals at multiple levels of performance (Van Mierlo & Kleingeld, 2010).

Rushall (1995) further notes that goals serve two general functions in sports settings:

- i) They can be used as reference standards for athletes and teams to assess:
 - a) Performance content and mood;
 - b) Pre-competition task-difficulty and self-efficacy; and
 - c) In-competition performances.
- ii) They also can be used as the focal point for athletes and teams to determine pre-competition and competition strategies and content.

Goals influence two important factors in sports (Rushall, op. cit.):

- i) Firstly, how a productivity/performance is viewed and how athletes consider future perform. Their effect is to govern productivity-performance efficacy. Thus, despite excellence in physiological conditioning and skill preparation, it is a team/athlete's

appraisal of what is to be done, how well are prepared to do it, and whether they think it can or cannot be done, that affects the quality of a performance. And,

- ii) Goals underlie the majority of performance applications which are made in the training and competitive circumstances. A team/athlete without goals will lack direction, purpose, and adequate assessment criteria, deficiencies which will degrade the motivational qualities of a sporting experience.

There are numerous types of goals, each being defined by its potential effect on performance and its purpose as a standard of reference. A hierarchy of sporting goals is (Rushall, op. cit.):

- i) Career goals;
- ii) Relatively long-term goals;
- iii) Productivity-performance goals;
- iv) Productivity-performance progress goals;
- v) Activity goals, and;
- vi) Intermediate goals.

Although all of the above goals are important, this research will focus solely on productivity/performance progress goals in relation to the interventions. In other words these goals function as indicators of training/competition progress towards the achievement of performance goals. Moreover, they usually contain a specified date for evaluation that will allow the timeliness of progress also to be considered. When they are explicitly determined they serve as a schedule of expected team improvements and self-improvements and constitute the basis for predicting future performance capacities.

These goals are established by the team/athlete but can be influenced by the board or coach if the team or athlete performs in the capacity of consultant during the goal formulation period. There is a need for the team/athlete to be able to justify why these goals can be achieved. Those justifications should be reinforced periodically as the athlete progresses to the exact day of goal assessment. Performance goals are not likely to be altered, except to marginally upgrade them. They serve as a standard for appraising on-going performances. A failure to achieve performance goals usually results in an extended period of demotivation.

Because of the complexity (as can be seen by the interdependence, potential for setting goals at multiple levels and sense of ownership), goal-setting is a robust motivational theory for TS where teams/athletes must be task oriented and collectivists.

During this research the problem of goal-setting as one theory of work motivation in the production process of an Angolan female handball team is considered, because it ends up significantly influencing the level of productivity. Pritchard *et al* (2011) indicates that there are two major pathways that decisively influence increasing productivity:

- i. The technological improvement, i.e. the infrastructure that the organisation can afford; and,
- ii. A pathway is related to the emotional behavioural field, as represented by increased motivation.

Goal-setting by itself is not enough. It requires a valid tool for measurement if the goal has been achieved. ProMES is proposed to address this. ProMES is an intervention aimed at enhancing the productivity of work units/teams within organisations through performance measurement and feedback (Pritchard *et al*, 2007). In this research, Pritchard's (1992) definition of productivity is applied: how effectively an organisation uses its resources to achieve its goals. The idea is to give people the tools to do a better job, while at the same time helping they feel a sense of ownership in the resulting system, and empowerment in determining important aspects of their work. The results have indicated that the system can be developed in many different types of organisations doing many different types of work, and the effects have proved to be quite strong (Larbi-Apau & Moseley, 2010). Findings suggest that ProMES can successfully be used within the sports industry (Roth, 2007) and conversations with the chosen handball team coaches for this research show support for ProMES.

Roth (op. cit.) found that ProMES intervention among work teams with knowledge intensive tasks and high expertise showed very large increases in team productivity/performance. Sports team also have knowledge intensive tasks because an athlete can be regarded as an expert on the game field. The main task of the coach is to motivate the athletes to share this knowledge and work in a coordinated fashion to maximize productivity/performance (Roth, op. cit.).

Fuhrmann (1999) found that ProMES helped to clarify priorities, goals and roles in work teams. According Roth et al. (2010) clarity is crucial for the development of a competitive sports team. Weinberg & McDermott (2002) confirm this by listing the key factors that lead to team success in TS: accurate performance measures, high levels of motivation, communication and

feedback. The ideas of these authors contribute to the idea that ProMES would be very applicable in the sports industry (Roth et al., 2010).

Motivation and productivity/performance of the athletes are crucial to the success of the organisation (team) within this industry (sports championship). The coaches of sports teams must motivate, train, and provide feedback to their workers (players) (Horn, 2005). The players must engage in extended and frequent practices as well as matches which require intense amounts of motivation for ideal productivity (Roth et al., 2010).

The greatest challenge of this research is to simultaneously apply a management tool and to broaden the debate on TS productivity using a motivation theory and a management organisational tool: Goal-setting and Productivity Measurement and Enhancement System (ProMES).

1.2 Relevance of the Study

Team sport (TS) refer to games played between two opposing teams. The players interact directly and concurrently to achieve an objective that involves team members facilitating the movement of a ball or a similar item in accordance with a set of rules, in order to score points and to prevent the opposition from scoring (Garganta, 2000). In these sports disciplines, the performance is carried out through a long-term and methodical training process planned to improve technical and tactical skills (productivity), as well as strategic competence, required to deal with match demands. The team's outcome depends on the complementary skills of all fielded players performing up to some standard. This implies positive cross derivatives of productivity. TS players continually interact, and coordination is achieved through constant mutual adjustment (Franck & Nüesch, 2009).

In this research performance will be described as an umbrella term for all concepts that consider the success of an organisation/team and its activities (Tangen, 2005).

The cost and sacrifice of running a high performance TS is never economical. In order to remain competitive, teams feel that they must continue to invest in better players, upgrading practice, improving coaching methodologies, and building new sports complexes with modern facilities (Adelson, 2009). Because of these strong investments, this research aims to broaden the debate on TS productivity using a management organisational tool: Productivity Measurement and Enhancement System (ProMES).

According to Franck & Nüesch (op. cit.:223) “[...] team production in team sports basically includes two stages: the preparatory stage and the competition stage. At the preparatory

stage, the entire squad of players and trainers employed by a club is almost constantly involved in a process of practicing. The goal of this preparatory process is to improve the team's playing strength, which includes the improvement of the technical and tactical capabilities of the players as well as the cooperation between them. The competition team consists of a (varying) selection of players from the entire squad. It competes in the championship race against the teams of other clubs from the same league. Team production at the competition stage usually involves one or two matches per week. Production at the contest stage has only one aim: to win the game and accumulate points to succeed in the championship race. Improving the technical and tactical abilities of players, which are important goals of preparatory team production, are at most by-products at the contest stage, where only winning matters."

TS is an activity in which a group of players, on the same team, work together to accomplish an ultimate goal: to win. The teamwork involved in TS such as handball revolves around the desire to improve in terms of the technical, tactical, physical, psychological and cooperation facets of the game. TS rely on all of the athletes working together equally in order to succeed at the task at hand, which means the whole is bigger than the sum of the parts.

An Angolan female handball team has been selected as a case study to verify which characteristics of this area of knowledge can influence the level of organisational productivity. The main reasons for this choice are:

- i) Angola has been the African champions in the last eight editions (from 1996 to 2010);
- ii) The team has represented Africa in the Olympic Games and World Championships continuously since 1996; and
- iii) The women's teams are greatly recognised in Angola.

The sports environment is marked by the need to maximise results. However, it essentially uses empirical models with a reduced scientific foundation. The use of a methodology, such as ProMES, is justified by the need that sports organisations have to meet and adopt other paradigms to establish a differentiated approach to the sector.

ProMES developed by Pritchard is of particular importance, because, this approach offers a method for measuring team performance or productivity which takes these features of typical team settings into account (Schmidt & Kleinbeck, 1997). The theoretical background of ProMES comes primarily from the motivational aspects of the Naylor, Pritchard, & Ilgen (1980, NPI) theory and a more recent motivation theory (Pritchard & Ashwood, 2007) based on NPI theory. These theories are expectancy theories. They postulate that people are motivated by

the anticipation of how their efforts will lead to satisfying their needs (Mitchell & Daniels, 2003; Latham & Pinder, 2005).

According to Algera *et al.* (1997) the basic characteristics of ProMES are:

- i) To develop productivity measures/indicators, using a bottom-up design methodology for key result areas (“products”) that can be controlled by the work group; and
- ii) Systematic feedback is periodically given to the work group. On the basis of this systematic feedback, and possibly goal-setting, the work group is supposed to improve its productivity.

The method, the resulting measurement and feedback systems aim at informing group members about how well they are meeting all their objectives. It will inform also in which areas further investments to improve productivity are worthwhile. With that, the capability of groups for self-regulating their performance in line with the organisational goals can successfully be supported and strengthened (Pritchard, Jones, Roth, Stuebing & Ekeberg, 1988). Productivity improvement can be achieved not only by mobilising on task effort, but also by developing new task strategies. In other words: not only by working harder, but also by working smarter.

For Larbi-Apau & Moseley (2010) one of the key elements in ProMES is feedback that is based on the objectives that the team should meet. People doing the work obtain regular, high quality feedback about how the team is doing with respect to the objectives that have to be met. The personnel in the team then use this feedback to develop plans for improving productivity, which results in increased likelihood of meeting the organisational objectives (Larbi-Apau & Moseley, 2010). There has been a considerable amount of research using this approach to measuring and improving organisational effectiveness (Pritchard, 1995).

Team goals increase motivation by affecting a task performer’s perceptions of the relationship between acts and products, products and evaluations, and evaluations and outcomes. Goals at the team level, rather than individual goals, contribute to less intra-group conflict and greater goal commitment and group performance quality (Tjosvold, 1991). Having clear team goals contributes to the use of more efficient communication strategies during task execution, better performance, and shared mental models of each other’s informational requirements (Larbi-Apau & Moseley, op.cit). Furthermore, clear team goals are consistent with behaviours that seek to clarify each team member’s roles and responsibilities, sharing information, and

anticipating how to deal with high workload or unexpected events, and making agreements about backing each other up (Cannon-Bowers, & Salas, 1998).

This bottom-up approach of ProMES is considered necessary not only for the quality but also for the acceptance of the system (Algera *et al.*, 1997). It fosters a sense of ownership in the unit personnel. In the literature on goal-setting and feedback (Weldon & Weingart, 1993) goal acceptance or goal commitment is a crucial condition for the motivation process.

Table 1- ProMES basic characteristics

Goal	Productivity improvement.
Means	Enhancing motivation.
Design approach	Bottom-up approach.
Focus	Aggregate performance indicators; Performance indicators that can be controlled by the personnel.
Feedback	Periodically.

Adapted from Algera *et al.* (1997)

1.3 Research Objectives

The aim of this research is to verify if one theory of work motivation - goal-setting theory - will influence productivity in an Angolan female handball team.

Goal-setting is one of the most thoroughly researched areas in management and organisational environments. Goal-setting has been proven to be one of the most powerful techniques to increase motivation and enhance performance and productivity in a number of organisational settings such as education and business (Bar-Eli *et al.*, 1997); however, there have been mixed results of goal-setting effects in athletic performance (Ward & Carnes, 2002). A goal can be defined “[...] as the object, aim, or endpoint of an action” (Bar-Eli *et al.*, op. cit.).

Findings have consistently demonstrated that specific, difficult, and self-generated goals have more beneficial effects on productivity than do easy goals, no goals, or “do your best” goals (Locke & Latham, 1990). Locke & Latham (2002) describe the “directive” and “energising” functions served by establishment of a work-related goal. A productivity goal provides direction toward relevant aspects of productivity. The more specific the goal, the more clear the appropriate direction of effort becomes. A productivity goal also energises, in that the more difficult the goal, the greater the effort directed toward goal attainment (Locke & Latham, op. cit.). Direction and effort are therefore said to mediate the goal-productivity relationship. In addition to direction and effort, persistence is found to mediate the

relationship between goal level and productivity, such that the higher the goal, the greater the persistence applied to the work task (Locke & Latham, op. cit.).

As a result of the robust observations from organisational settings, Locke & Latham (1985) suggested that the principles of goal-setting theory could be applied to the competitive sporting environment.

Goals influence two important factors in sports (Rushall, op. cit.):

- i) Firstly, how a performance is viewed;
- ii) How an athlete considers he/she will perform.

According to Rushall (op. cit.: 32) “[...] their effect is to govern performance efficacy. Thus, despite excellence in physiological conditioning and skill preparation, it is an athlete's appraisal of what is to be done, how well he/she is prepared to do it, and whether he/she thinks it can or cannot be done, that affects the quality of a performance. Goals underlie the majority of performance applications which are made in the training and competitive circumstances. An athlete without goals will lack direction, purpose, and adequate assessment criteria, deficiencies which will degrade the motivational qualities of a sporting experience.”

As described earlier, it is necessary to consider the problem of goal-setting as one theory of work motivation in the production process of a female handball team, because it ends up significantly influencing the level of productivity. This concern finds that there is a paradox between motivation and increased productivity. Even Pritchard (1995) indicates that there are two major pathways that decisively influence increasing productivity. One is represented by the technological improvement, i.e. the infrastructure that the organisation can afford, and the other is related to the emotional behavioural field, represented by increased motivation.

As discussed in the previous paragraphs goal-setting has been proven to be one of the most powerful techniques to increase motivation and enhance performance and productivity in a number of organisational settings such as education and business; however, there have been mixed results of goal-setting effects in athletic performance.

According to Burke (2009:9) “[...] in elite sport, a carefully managed goals strategy is very effective in enhancing performance – far superior to vague aspirations or no goals at all. Psychological research demonstrates that difficult, high level goals prompt superior performance much more successfully than vague, do-your-best, or no goals. The strength of

goal-setting effects has remained consistent and as a behavioural technique, goal-setting is a highly robust performance enhancement strategy.”

One purpose of this research is to more fully integrate motivational facets as outlined by goal-setting theory as a factor that influence the process of increasing productivity in TS.

To achieve this objective, the first research hypothesis, is:

Goal-setting as a motivational theory will influence productivity in an Angolan female handball team.

Typical components of ProMES are objectives or goals, multidimensional productivity measures/indicators and feedback. The positive effects of combining specific and challenging goals with timely, specific, and positive outcome feedback have been well documented, both in laboratory and in field settings (Alvero, Bucklin, & Austin, 2001; Locke & Latham, 2002). Given the effectiveness of such components, the hypothesis to be addressed in this research is to relate the feasibility of applying a method aimed at business organisations, in a sports organisation. The sports environment requires adopting scientific methodologies that can boost the productivity of individual and collective components of a given team. There is, then, the second hypothesis:

Productivity will improve in an Angolan female handball team after the implementation of a productivity measurement system as ProMES.

1.4 Research Statement

The utilisation of goal-setting and the use of ProMES system as a work tool to measure productivity will influence and improve productivity in an Angolan sports organisation.

1.5 Research Methodology

The aim of this research is to verify if goal-setting theory as a theory of work motivation will influence productivity in an Angolan female handball team, using the ProMES system as a work tool to measure and improve productivity.

Team Sports goal represents an objective or target in relationship to a specific task like to win the national championship (Locke, Shaw, Sarri, & Latham, 1981). Given the strength of the individual goal-setting effects in sports (Kyllo & Landers, 1995), the strong effect that team goal-setting has in sports and organisational productivity (O’Leary-Kelly, Martocchio, & Frink, 1994), and the importance of the team in individual adherence to training programs, goal-

setting could represent a powerful influence in a sports context. This possibility is consistent with the suggestion made by Locke & Latham (2006:267), that “[...] goal-setting can be used effectively on any domain in which an individual or group has some control over the outcomes”. From the literature presented by Pritchard (2011) it has been proposed that the ProMES system can be considered efficient and effective for measuring and improving organisational productivity, while acting at the same time in the sphere of goal-setting and improving job satisfaction, because the players are in the presence of exceptionally well established and reliable goals (Locke & Latham, 2002).

A case study of these two subjects on a female handball team in Luanda, Angola, will be described. The research addressed two hypotheses:

- i. Goal-setting as a motivational theory will influence productivity in an Angolan female handball team; and
- ii. Productivity will improve in an Angolan female handball team after the implementation of a productivity measurement system such as ProMES.

For the purpose of this research the female handball team from Clube Desportivo 1º D’Agosto was approached to participate in the survey and in the ProMES implementation and evaluation, which provided in-depth information on the influence of goal-setting and the contribution of a system like ProMES to productivity. It is important however to stress that the focus of the study will be on the mentioned team.

The research comprises the following:

- i. An extensive literature review to acquire a theoretical foundation of the concepts that constitute goal-setting and ProMES system;
- ii. A survey will be conducted based on three questionnaires. The survey will gather information on the team profile in relation to collectivism, task and ego, and goal-setting practices. The survey will be conducted across the handball team as a whole and it is a cross sectional research. And
- iii. ProMES system will be implemented and evaluated from the beginning of the sports season (January 2011) up until the Angolan championship (July 2011).

The research will use the following instruments: the interview, the questionnaires and observation of matches.

1.6 Value added by this research

By understanding the influence of goal-setting and the use of a system like ProMES in measuring and improving productivity in a sports organisation, the research will identify the benefits or problems that are experienced by implementing both of them in an Angolan handball team.

Chapter 2 Literature Review

This chapter covers an extensive literature review to establish a theoretical research base.

2.1 Productivity, performance and productivity measurement

The terms productivity and performance are commonly used within academic and business world; they are often confused and considered to be interchangeable, along with terms such as efficiency, effectiveness and profitability (Jackson & Petersson, 1999).

2.1.1 Productivity

The scientific study of productivity dates back to the days of Frederick Taylor and his *Principles of Scientific Management* (1911). Productivity is a concept that has profound importance in our lives (David, 2003).

At the organisational and industry level, increases in productivity can create more competition, which can lead to industry and firm growth (Pritchard *et al*, 2011). At the individual level, productivity growth can lead to improvements in the quality of life, increased leisure time, and advancement within an organisation (Pritchard *et al*, 2011). Moreover, given the interrelatedness of economic markets across the world, it is beneficial for all countries and their competitors to experience productivity growth (Harris, 1994). Productivity has become a global concern, which is linked to organisational longevity (Druckman, Singer, & Van Cott, 1997) and forms the backbone of all organisations, being able to do more with less is a competitive advantage (Weaver, 2008). Grossman (1993) discusses productivity improvement as one of the key competitive advantages of an organisation in the following way: organisations need to realise that gains in productivity are one of their weapons to achieve cost and quality advantages over their competition.

The different definitions and perspectives from which productivity can be viewed have provided a body of literature that is complex and often confusing. Chew (1988) suggests that even though the concept of productivity has existed for a long time, remarkably many people who make decisions every day about improving plant efficiency do not know how to answer the simple question of what productivity is. Bjorkman (1991) suggests that decisions on productivity improvement are often based on individual opinions instead of on a shared and commonly held view.

Productivity is a multidimensional term, the meaning of which can vary, depending on the context within which it is used (Tangen, 2005). In industrial engineering, productivity is generally defined as the relation of output (i.e. produced goods) to input (i.e. consumed

resources) in the manufacturing transformation process (Sumanth, 1994). According to Voros (2006) organisational productivity is defined in terms of task level that firm can analyse focusing on accomplishing a task as quickly and efficiently as possible in productivity process. This involves in many production processes such as reduce waste, work process, non-value task, and increase product output and quality.

Tuttle (1981) and after Pritchard (1992) proposed five definitions of productivity from different academic disciplines:

- i. The economic perspective presents probably the most salient definition of productivity, which is analogous to an efficiency index: the ratio of outputs over inputs in units of real physical volume (Pritchard, 1992);
- ii. The accounting perspective focuses on financial efficiency measures based on profits and sales (Tuttle, 1981);
- iii. The industrial engineering perspective focuses on the efficiency of the system process;
- iv. The managerial approach views productivity in the broadest terms, as the set of organizational components that lead to effective and efficient organizational functioning; and
- v. Finally, the behavioural approach (Pritchard, 1992) places emphasis on the aspects of productivity that the individual can control, working under the assumption that behavioural change will lead to productivity change. Although there are many different indices and perspectives on productivity, it is important to note that the choice of index is determined by the purpose for which it will be used (Mahoney, 1988).

Ghobadian & Husband (1990), proposed three broad categorisations for productivity:

- i. The technological concept: the relationship between ratios of output to the inputs used in its production;
- ii. The engineering concept: the relationship between the actual and the potential output of a process; and
- iii. The economics concept: the efficiency of resource allocation.

Bernolak (1997) provides a useful explanation of productivity: “[...] productivity is a "real" concept; it is a volume relationship between physical output and physical input. If more products or services (outputs) of equal or superior quality are produced from the same resources (inputs), productivity has increased. If the same quantity and quality of products or services has been produced from less resources, it also means that productivity has increased. Accordingly, if more products or services of equal or superior quality are produced from less resources, it is an even greater increase in productivity. If the quality of the products or services produced from the same volume of resources has been improved, again it is a productivity improvement because a better product or service is clearly a real improvement, it is "more" of a product or service.” And continues to state that “[...] productivity is an evaluation of the entire production and distribution process, as well as of the quality of the products and services produced, per person or other resources used. It does not mean that everyone involved in the process works "harder" but rather that they must work "smarter" so as to achieve a better utilization of all other resources.”

Broman (2004) points out the inherent similarities in many definitions of productivity; the basic content seems to be the same. Table 2 shows a number of these variations, created from examining the term from different perspectives (Broman, *op. cit.*).

The analyses of the definitions outlined above show an emphasis on efficiency, productivity has also been defined in terms of effectiveness, the ratio of outputs in relation to standards or expectations (Mahoney, 1988; Pritchard, 1992). A comprehensive conceptualisation of productivity should include both efficiency and effectiveness (David, *op. cit.*).

According to Tangen (*op. cit.*) the meaning of productivity varies depending on what context it is placed in. For example, a strategic perspective of productivity amongst senior managers will usually differ from the more operational view of productivity among operators of an assembly line. This reasoning indicates that productivity must be seen from a different point of view at each level and that the means for achieving high productivity may be level specific (Tangen, *op. cit.*).

Table 2- Examples of definitions of productivity

Definition	Reference
Productivity = faculty to produce	(Littre', 1883)
Productivity is what man can accomplish with material, capital and technology. Productivity is mainly an issue of personal manner. It is an attitude that we must continuously improve ourselves and the things around us.	(Japan Productivity Centre, 1958 (from Bjorkman, 1991))
Productivity = units of output/units of input	(Chew, 1988)
Productivity = actual output/expected resources used	(Sink & Tuttle, 1989)
Productivity = total income/(cost + goal profit)	(Fisher, 1990)
Productivity = value added/input of production factors	(Aspen et al., 1991)
Productivity is defined as the ratio of what is produced to what is required to produce it. Productivity measures the relationship between output such as goods and services produced, and inputs that include labour, capital, material and other resources.	(Hill, 1993)
Productivity (output per hour of work) is the central long-run factor determining any population's average of living.	(Thurow, 1993)
Productivity = the quality or state of bringing forth, of generating, of causing to exist, of yielding large result or yielding abundantly.	(Koss & Lewis, 1993)
Productivity means how much and how well we produce from the resources used. If we produce more or better goods from the same resources, we increase productivity. Or if we produce the same goods from lesser resources, we also increase productivity. By "resources", we mean all human and physical resources, i.e. the people who produce the goods or provide the services, and the assets with which the people can produce the goods or provide the services.	(Bernolak, 1997)
Productivity is a comparison of the physical inputs to a factory with the physical outputs from the factory	(Kaplan & Cooper, 1998)
Productivity = efficiency * effectiveness = value adding time/total time	(Jackson & Petersson, 1999)
Productivity = (output/input) * quality = efficiency * utilisation * quality	(Al-Darrab, 2000)
Productivity is the ability to satisfy the market's need for goods and services with a minimum of total resource consumption.	(Moseng & Rolstada's, 2001)

Productivity is a relative concept: it cannot be said to increase or decrease unless a comparison is made, either of variations from a "standard" at a certain point in time (which can be based on, for example, a competitor or another department) or of changes over time (Tangen, op.

cit.). Moreover, as stated by Misterek, Dooley & Anderson (1992), improvements in productivity can basically be caused by five different relationships:

- i. Output increases faster than input; the increase in input is proportionally less than the increase in output (e.g. managed growth);
- ii. More output from the same input (e.g. working smarter);
- iii. More output with a reduction in input (e.g. the ideal?);
- iv. Same output with fewer inputs (e.g. greater efficiency);
- v. Output decreases, but input decreases more; the decrease in input is proportionately greater than the decrease in output (e.g. managed decline).

The term productivity is used in a number of ways, however, this research uses the definition by Pritchard (1992:455) “[...] how well a system uses its resources to achieve its goals”. With this definition, productivity is a combination of both efficiency and effectiveness.

Productivity in teams is fundamentally different than individual productivity. Effective team performance requires a focus on both task work, any task related functions, and teamwork, the ability to work cohesively to attain common goals (McIntyre & Salas, 1995). The tasks completed by teams are also different, in that they require a degree of interdependence in order to be completed (Weaver, op. cit.).

The unique nature of team-based work complicates the design of productivity interventions designed to maximize team performance (Weaver, op. cit.). “Productivity is often confused with “production” which refers to the amount of a product or service produced.” “Productivity”, on the other hand, refers to the amount produced per person or per other resources used.” (Bernolak, op. cit.).

2.1.2 Sports Team Development

Team development is typically characterised by the fact that the total is more than the sum of its parts (Alchian & Demsetz, 1972). Thus, not only does the simple aggregation of members’ task-relevant abilities matter, but the intra-team talent composition is likely to influence team productivity as well (Franck & Nüesch, 2010). However, the team does not work well if one just simply pulls a group of people together and say “[...] go forth and do good things [...]” (Fraser & Hvolby, 2010:77).

Team development in handball basically includes two stages: the preparatory stage and the competition stage. At the preparatory stage, the entire squad of players and coaches employed by a club is almost constantly involved in a process of training (Franck & Nüesch, op. cit.). The goal of this preparatory process is to improve the team's playing strength, which includes the improvement of the physical, technical and tactical capabilities of the players as well as the cooperation between them (De La Rosa & Farto, 2007).

The competition team consists of a (varying) selection of players from the entire squad. It competes in the championship and other "Cup's" against domestic (championship and cup's) and foreigner teams (international cups). Team production at the competition stage usually involves one or two 60 minutes match(s) per week. The number of players eligible to play is defined by the rules of handball. The competition team comprises seven players on the court (one goalkeeper and six field players) and seven potential substitutes. Production at the contest stage has only one aim: to win the game and accumulate points to succeed in the championship race (Franck & Nüesch, op. cit.). Improving the players and team skills (physical, technical and tactical), which are important goals of preparatory team production, are essentials at the contest stage, where only winning matters (De La Rosa & Farto, op. cit.).

"Studying the contest stage of team production is tantamount to studying the relationship between the players on the field trying to win a championship game. It seems likely that the team's outcome depends on the complementary skills of all fielded players performing up to some standard, which implies positive cross derivatives of productivity." (Franck & Nüesch, op. cit.:220)

Even an outstanding goalkeeper can hardly manage to impede the opposition's goal scoring if his team's defence is nonexistent. Similarly, even outstanding "shooters" become inoffensive if they are not supported by good offensive passes.

Handball players continually interact, and coordination is achieved through constant mutual adjustment. Interaction among players is even higher than in American Football, where each player's role is narrowly circumscribed (Katz, 2001). The degree of cooperation is similar to that of basketball teams and much higher than for baseball teams. It seems somewhat of an exaggeration to say a handball team is stronger than the weakest team member. In handball, a weak individual performance can at least partly be absorbed by the performance of others.

However, these substitutive elements on the court are very limited. Since individual playing abilities are rather complementary at the contest stage of team production, weak individual performances can endanger the output of the entire team (Franck & Nüesch, op. cit.).

2.1.3 Performance

Performance is distinct from productivity (Tangen, 2005).

Productivity is a multidimensional term, one has to remember that it is a fairly specific concept generally considered to be a measure of objective output, such as number of widgets built or number of dollars in sales, or an input to output ratio (Pritchard, 1992). However, output in TS most of the time is measured in terms of victories. An output needs an input, in TS production process the input is reflected by the player's productivity which is dependent on factors like talent, physical characteristics, tactical expertise and experience (Carmichael & Thomas, 1995).

Performance, on the other hand, is an even broader term that covers both overall economic and operational aspects (Tangen, op. cit.). Conversely, performance has a more qualitative component to it, and goes beyond just output. It considers the behaviours or process an employee uses to generate output (Cornejo, 2007). According to Stewart (2009) performance is defined as a measure of the effectiveness and efficiency, which includes the importance of internal team's processes, of a given team in pursuing and achieving objectives and goals. This means, there is a link between performance and results expressed in terms of success or failure. In turn, this has led to performance goal-setting, especially those relating to job and team performance. Goal-setting has been proven to be one of the most powerful techniques to increase motivation and enhance performance and productivity in a number of organisational settings such as education and business; however, there have been mixed results of goal-setting effects in athletic performance (Garrison, 2009). Goals have been proven to be effective in increasing long term motivation and act as a focus of one's efforts (Bar-Eli *et al.*, 1997). To this end, Pinder (1998:14) believes that "[...] motivation is an important factor in job performance and human productivity".

Murphy & Williams (2004) relate the continued superior performance of some of the most successful organisations has been attributed to, in part, unique capabilities for managing human resources to gain competitive advantage. And Olsen & Zhao (2002:23) state that "[...] the challenge for management will be creating value through people rather than using them as objects".

Although its operationalisation varies according to the particular theory being used, motivation has consistently been linked to performance (Motowidlo, 2003).

Goal-setting theory states that the expectancy, instrumentality, and valence of outcomes will be high if goals are difficult (challenging), as well as specific and attainable (Locke & Latham, 2002). Specifically, there is the assumption that behaviour reflects conscious goals and

intentions. Consequently, the expectation is that employee efforts and performance in organisations will be influenced by the goals assigned to, or selected by, these employees (Fried & Slowik, 2004). Theorists argue that, to maximize employees' efforts and subsequent performance, performance goals should be challenging rather than easy, but they should also be achievable (Fried & Slowik, *op. cit.*). In the minds of employees, the experience of success in the pursuit of challenging (but attainable) goals, is associated with positive and valued (high-valence) outcomes. These outcomes are both internal [for example, a sense of accomplishment, escape from feeling bored or example, higher income, job security, and opportunities for promotions (Mento, Klein, & Locke, 1992)]. The theory also states that goals should be specific (e.g., increase productivity by five percent in the next year), rather than general (i.e., "do your best"). There is an emergent body of evidence demonstrating that "[...] the methods used by an organisation to manage its human resources can have a substantial impact on many organisationally relevant outcomes" (Delery, 1998).

Goal-setting as a motivational theory can be one of these methods.

According to Audas *et al.* (2002) TS performance has two characteristics:

- i. Performance depends ultimately on the quality of playing talent; and
- ii. Most successful teams do not remain successful forever; and most unsuccessful ones eventually find the wherewithal to improve. On average, therefore, the performance of the most successful teams at time t will tend to decline at time $t+1$, and the performance of the least successful will tend to improve.

2.1.4 Efficiency and effectiveness

Effectiveness means the capability of producing an effect (Drucker, 2006). In management, effectiveness relates to getting the right things done. Drucker (2006:4) reminds that effectiveness is an important discipline which "can be learned and must be earned."

According Sink & Tuttle (1989) effectiveness is usually in simple words described as: doing the right things. While efficiency means: doing things right. Several examples of other definitions are given in Table 3. Nevertheless, most researchers concur that efficiency is strongly connected to the utilisation of resources and mainly affects the denominator (inputs) of the productivity ratio. In detail, efficiency is commonly defined as the minimum resource level that is theoretically required to run the desired operations in a given system compared to how much resources that are actually used (Tangen, *op. cit.*).

Furthermore, if efficiency will be transform into an indicator is rather simple to measure, whether it is based on time, money or other units. Efficiency measurement in sports and particularly in handball is challenging. If efficiency is a simple notion, defined by the ability of reaching objectives with respect to means, the difficulty lies in the identification of a handball club's objectives and means (Jardin, 2009).

Effectiveness, on the other hand, is a more diffuse term and in most cases very difficult to quantify. It is often linked to the creation of value for the customer and mainly influences the numerator (outputs) of the productivity ratio. A good, simple description of effectiveness is "the ability to reach a desired objective" or "the degree to which desired results are achieved". Such definitions lead to an interesting concept: there are usually no limits as to how effective an organisation can be (Tangen, op. cit.).

Table 3 - Examples of definitions of effectiveness and efficiency

Definitions of efficiency	Definitions of effectiveness	Reference
Efficiency is an input and transformation process question, defined as the ratio between resources expected to be consumed and actually consumed.	Effectiveness, which involves doing the right things, at the right time, with the right quality, etc., can be defined as the ratio between actual output and expected output.	(Sink & Tuttle, 1989)
Efficiency is an output to input ratio, for example, monthly manufacturing output divided by number of labour hours used.	Effectiveness is the relationship of outputs to some standard or expectation, for example, monthly output expressed as a percentage of the unit's goal.	(Pritchard et al., 1989)
Efficiency is used for passive or operational activity, which is usually defined technically so that the system and its behaviour are foreseeable in advance.	Effectiveness is basically used in active or innovative activity performed by a risk taker and based on a rather broad perspective.	(Kurosawa, 1991)
Efficiency is the ratio of actual output attained to standard output expected, and reflects how well the resources are utilised to accomplish the result.	Effectiveness is the degree of accomplishment of objectives, and shows how well a set of results is accomplished.	(Sumanth, 1994)
Efficiency is a measure of how economically the firm's resources are utilised when providing the given level of customer satisfaction.	Effectiveness refers to the extent to which the customer requirements are met.	(Neely et al., 1995)
Efficiency means how much cost is expended compared with the minimum cost level that is theoretically required to run the desired operations in a given system.	Effectiveness in manufacturing can be viewed as to what extent the cost is used to create revenues.	(Jackson, 2000)
Efficiency = ideal system dependent	Effectiveness = value added time/ideal	(Jackson,

time/total time	system dependent time	2000)
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Adapted from Tangen (2005)

Jackson (2000) states that a single focus on efficiency does not seem to be a fruitful way to increase productivity. Unfortunately, such single focus is often the case in industry, especially when cost-cutting activities are employed. However, it is the combination of high values of efficiency and effectiveness in the transformation process that leads to high productivity. Thus, it is possible for an effective system to be inefficient; it is also possible for an efficient system to be ineffective (Tangen, 2002b).

Espitia-Escuer & García-Cebrian (2006:34) related the final classification (ranking) of a team in sports “[...] depends more on its efficient use of resources than on its potential, since teams that should have been relegated according to their resources instead remained in the First-Division, and vice versa. From the point of view of performance management, this implies that it is a team’s ability to make good use of the abilities and skills of its players, and not the team’s potential, that proves decisive in the achievement of its objectives.” This means a handball team must do the right things in the most economical way in order to achieve an overall goal.

2.1.5 Criteria for Successful Productivity Measurement

To improve productivity, it is necessary to measure it. Productivity measurement is used to refer to performance appraisal, management information systems, production capability assessment, quality control measurement, and the engineering throughput of a system (Drewes & Runde, 2002). Guzzo (1988) notes that most productivity measures in I/O psychology are measures of partial-factor productivity. However, in spite of the multiple definitions and perspectives from which productivity can be viewed, there are certain key design criteria for successful productivity measurement. Although the criteria that will now be discussed focus on the behavioural approach to productivity measurement, they are also applicable to other perspectives of productivity. These criteria will be reviewed at two levels:

- i. The measure level (i.e., the specific indicators that compose the measurement system); and
- ii. The system level (i.e., the productivity measurement system as a whole).

Researchers of organisational productivity (Tuttle, 1981; Kendrick, 1984; Mahoney, 1988; Pritchard, 1992; Sink & Smith, 1994) provide several guidelines for the measures, indicators, or indices that will compose a productivity measurement system.

- i. Individual measures should be sensitive to any changes in the levels of productivity across time (Sink & Smith, op. cit.);
- ii. The measures should also be comparable across time, i.e., one should be able to make meaningful longitudinal comparisons from one time period to the next (Tuttle, op. cit.);
- iii. Productivity indices should capture their differential importance to the overall productivity of the individual or team (David, op. cit.);
- iv. Measures should also be able to capture any nonlinearity in the relationship between different levels of performance and the contribution that is made to the organisation (Pritchard, op. cit.). An example of nonlinearities would be a game where playing all the time with the same players after a certain point may not bring any additional value, and can even be counterproductive because the substitute's players will create a lack of confidence; and
- v. Productivity indices should capture both the unit's effectiveness and its efficiency (Pritchard, op. cit.).

From a practical perspective the measures should be as cost-effective as possible; they should make use of existing sources of data insofar as these are reliable and valid (David, op. cit.). Additionally, the value to the organisation provided by the measurement should meet or exceed the cost of the measurement (David, op. cit.). Productivity measures should be valid and also be perceived as valid by organisational members in order to gain increased acceptance (Tuttle, op. cit.).

The validity of the measures involves a series of characteristics:

- i. The measure should be fair (Tuttle, op. cit.);
- ii. Under the unit's control (Pritchard *et al.*, 1989; Sink & Smith, op. cit.);
- iii. Relevant to the work being done (Sink & Smith, op. cit.);
- iv. unbiased (Tuttle, op. cit.); and
- v. Reliable (i.e., verifiable by multiple methods or evaluators) (Sink & Smith, op. cit.).

Related to the validity of the measures is their understandability. Indicators of productivity should be intelligible to the people who must take action on the measurement (Kendrick, op. cit.). Finally, productivity indices should span the range of productivity levels that could be achieved by the person or team (Sink & Smith, op. cit.).

At the level of the productivity measurement system, there are additional essential characteristics to successful measurement:

- i. An important characteristic is the fact that the results of the measurement need to be made available to organisational members (David, op. cit.);
- ii. Knowledge of results/feedback data can then serve to motivate and cue workers/players to specific aspects of their performance (Kluger & DeNisi, 1996) that can lead to productivity improvements; and
- iii. The measurement system should be comprehensive (Tuttle, op. cit.). It should include all relevant aspects of the individual or team's performance in relation to the organisation's objectives, and in turn assess all the relevant inputs being used to in games and championships.

This is usually achieved by having multiple sub-indices of productivity as components of the measurement system (Pritchard, op. cit.). Another criterion related to the comprehensiveness of the system is the presence of an overall index of productivity (David, op. cit.). The overall index allows the sub-indices to be captured by a single figure on a common metric (Campbell & Campbell, 1988), which can then be used to gauge improvements or decrements in productivity across time. This overall index also allows a better evaluation of the effects of an organisational intervention on productivity (Pritchard, op. cit.). The overall index should be comparable across teams and organisations (Kendrick, op. cit.). If the measurement system can quantify the progress towards the organisation's goals, it can be that much more successful (David, op. cit.).

ProMES, the chosen tool in this dissertation, has shown significant positive effects on productivity in both individual and team level applications (Pritchard, Harrell, Diaz Granados & Guzman, 2007; Roth et al., 2010).

2.1.6 Teamwork

The topic of teamwork has attracted research from several disciplines (Sapsed *et al*, 2002). This is so, because, setting up teamwork is usually motivated by benefits such as increased productivity, innovation, and employee satisfaction (Moe, Dingsøy & Dybå, 2010).

Over the years, a number of attempts have been made to define teamwork (Robbins & Finley 1995) and classify teams (Cohen & Bailey 1997). However, there remains no generally accepted definition. At different times and in different settings, various terms such as “teams”, “groups” and “work units” have been used to describe this form of work organisation (Benders & Van Hootegem, 1999). These terms have frequently been used in conjunction with adjectives such as “autonomous”, “semi-autonomous”, “self-directed”, “high-performing” and “self-managed” (Mueller, Procter & Buchanan, 2000).

The salient domains of a consensus current definition of teamwork are these:

- i. Membership - two or more individuals (Kozlowski & Ilgen, 2006; Salas *et al.*, 2000);
- ii. Interactions - interdependent, adaptive, dynamic (Kozlowski & Ilgen, 2006; McGrath, Arrow & Berdahl, 2000; Salas, Burke & Cannon-Bowers, 2000);
- iii. Context - embedded in a hierarchy of levels (Kozlowski & Ilgen, 2006) ;
- iv. Relations - multiple, bidirectional, and nonlinear causal (McGrath *et al.*, 2000); and
- v. Complexity (Barrick, Bradley, Kristof-Brown & Colbert, 2007).

Cohen & Levesquey (1991) expressed properly the meaning of teamwork when mentioning that a joint action performed by a team involves more than just the union of simultaneous individual actions, even when those actions are coordinated. When a team decides to do something together, it must act more like a single agent with beliefs, goals, and intentions of its own, over and above the individual ones. Handball is an example of an activity that simply cannot be performed by a single individual, but can be one way of achieving the goals of the individuals and of course all team members.

2.1.6.1 Definition of teamwork

Teams can be defined as a group of diverse stakeholders who come together in an attempt to engage in problem solving (Avolio, Jung, Murry & Sivasubramaniam, 1996). Cohen & Bailey

(1997) define teams as a group interdependent in tasks that share responsibility for outcomes, view themselves as an intact social group embedded in a larger group, and manage their relationship across boundaries.

“Teamwork is a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable.” (Katzenbach & Smith, 1993:32)

“Self-managed or autonomous teams give their members authority over decisions that in other contexts are made by supervisors, such as how to perform their tasks or, in more advanced situations which tasks to perform.” (Cappelli & Neumark 2001:748)

“A team or group is a complex, adaptive, dynamic entity or system embedded in a hierarchy of levels and characterized by multiple, bidirectional relationships, typically interacting interdependently and dynamically towards a common goal.” (Salas *et al.*, 2007:189)

The first step to understanding teamwork is to recognize that all cognition originates within the individual (Brown, 2009). From that initial stance, researchers are intent on deducing how being a member of a team affects individual cognitive processes and the processes that emerge at the team level (DeShon *et al.*, 2004). However, it is beyond controversy that teams with more talented individual members outperform, *ceteris paribus*, teams with less talented members (Franck & Nüesch, 2009).

Teamwork is usually viewed as a set of interrelated thoughts, actions, and feelings of each member that are needed for the individual members to function as a team. The concept of teamwork carries with it a set of values that encourage listening and responding constructively to views expressed by others, giving others the benefit of the doubt, providing support, and recognizing the interests and achievements of others (Katzenbach & Smith, 1993). Such values are important because they promote individual performance, which boosts team performance, and they help teams to perform well as a group, and good team performance boosts the performance of the organisation.

Another aspect of definitional consistency is the issue of terminology for teams or groups. The literature reveals that although “group” has been the primary term used to describe the grouping of two or more individuals in psychology and social psychology research, the word “team” has emerged with greater prevalence in studies of business organisations (Mobley, 2010). While a significant body of research uses the terms “group” and “team” synonymously (Guzzo & Dickson, 1996), or at least fails to specify any distinctive differences between the two terms, more recent research places particular meaning to describe small groups with high

interdependence as “teams” (Barrick *et al.*, 2007). In fact, much of the recent literature makes explicit this difference through reference to highly interdependent groups as “real teams”, as opposed to less interdependent groups as “work groups” (Barrick *et al.*, 2007).

Casey (1985) distinguishes between teams and working groups displaying the same characteristics of effectiveness by suggesting that the main difference between a team and an effective working group is that teams work to solve jointly-owned problems that no one member is expert in and that it is only by pooling the expertise of all the constituent members to solve a problem that team work actually occurs.

2.1.6.2 Team Effectiveness

A number of theoretical arguments have been developed to explain why team working might lead to improved organisational performance. Some theories focus on the effort and motivation of individual workers and claim that they work harder. Strategic human resource management theory, for example, suggests that an appropriately designed human resource system, which typically includes teamwork, will have a positive effect on an employee’s job satisfaction, commitment and motivation, leading to behavioural changes that result in improved organisational performance (Becker *et al.*, 1997). Similarly, self-leadership theory focuses on participatory decision-making, individual discretion and teamwork as important motivating factors, and suggests these will lead to more committed employees who strive for greater efficiency and effectiveness (Sims & Manz, 1996). Work design theory, however, tends to emphasize intra-group processes such as job design, task variety and interdependence (Wall & Martin, 1987), while sociotechnical theory highlights changes in the structure of an organisation and its processes as the main mechanism by which performance is enhanced (Mueller *et al.*, 2000).

It is apparent from this that the teamwork– performance link is related to the more general discussions surrounding human resources management and performance, empowerment, self-leadership and so on. However, teamwork research should not be considered only within these contexts since a specific teamwork literature has emerged over the course of time (Benders & Van Hootegem, 1999; Salas *et al.*, 2000).

Salas, Sims, and Burke (2005) reviewed the findings on teamwork and came up with a model that consisted of core components of teamwork and their supporting coordinating mechanisms:

- i. Team leadership - generally refers to a leader who is able to coordinate, motivate, and assess the team performance among other teamwork enhancing tasks;

- ii. Mutual performance monitoring - is an ability to monitor one another's performance and apply task strategies when needed;
- iii. Backup behaviour - is an ability to anticipate and help other team members, or to shift workloads when needed;
- iv. Adaptability - refers to a team's ability to adjust when needed (this can mean backing up others);
- v. Team orientation - Team orientation is considered by some to be a state-like rather than a trait-like individual difference (Salas et al., 2005) that reflects acceptance of team norms, cohesiveness of the group, and self-awareness as a team member. There is a possibility that it is trainable and based on past team experiences, expected outcomes, and perceptions of the person's ability to complete the task. Findings have shown that those with a high level of team orientation assign a high priority to team goals and possess a willingness to participate in team activities. Higher team orientation results in increased coordination and cooperation, which facilitate team performance and many other teamwork processes.

These components are considered to facilitate effective teamwork processes; however, they need the following supporting mechanisms to function at peak (Salas *et al.*, 2005):

- i. Shared mental models - refer to a shared understanding or knowledge about how members will interact and relationships about the task;
- ii. Mutual trust - Mutual trust concerns the shared perception that individuals in the team will perform particular actions important to the group, and is thought to affect a variety of team processes. Trust fosters a willingness to share information more freely throughout the team. Mutual trust is considered extremely important within the task because it affects how an individual interprets other team members' behaviour. If a negative attribution is made (such as that another team member is acting out of self interest or is thought to be loafing) this usually leads to a negative spiral of team functioning;
- iii. Closed loop communication - is concerned with the exchange of information between team members and is facilitative of many other teamwork processes, though the chance of it being positive and occurring are dependent on the core processes of the model (such as team orientation and mutual trust).

Prior to this theoretical development, most models of team effectiveness did not specify what teamwork processes were (Marks *et al.*, 2000).

The taxonomy of Salas *et al.* (2005) focuses on those elements that were considered most important for team performance which they conceptualize in the model as team effectiveness. One of the central arguments of their review is that a team can be guaranteed success and high levels of performance if they engage in both the supporting mechanisms and core processes of teamwork.

However, according to Fried, Topping & Edmondson (2006) there are four major factors that influence the team effectiveness:

- i. Team processes - involve the actions and interactions by which decisions are made, problems are solved, and work is accomplished;
- ii. Team characteristics - are more than merely a collection of individuals, but rather a cohesive group that possesses diversity and expertise in the work to be accomplished;
- iii. Nature of the task - to be performed includes identifying well-defined team goals that are supported by the organisational culture;
- iv. Environmental context - an organisational culture that values and emphasizes teamwork and participation has been found to support team effectiveness.

Other team effectiveness factors:

- i. Formal learning - teams increase the learning required of individuals, since each team member must master skills that are broader and deeper than in a traditional structure (Orsburn & Moran, 2000). In formal learning situations, someone besides the learner determines what needs to be learned and the sequence of learning activities. In the case of formal teamwork-related training, organisations can put in place programs such as problem solving, effective communications, conflict resolution, and planning and task coordination. No longer are individuals in teams required to learn only the various tasks; they are now expected to engage in decisions about products and process improvements along with business and customer concerns. These additional demands and responsibilities therefore increase the learning requirements for team members. Orsburn & Moran (2000) suggest a three-part formal training curriculum focusing on technical training such as job-related skills and knowledge, communication skills training such as interpersonal and group communication, and administrative training

that includes an understanding of the business and its key processes. Marsick & Watkins (1990) define such classroom-based learning as formal learning because it is controlled by the institution.

- ii. Informal learning - formal learning or classroom training is only one dimension of workplace learning. It is acknowledged that in regards to teamwork, the learning of team members is enhanced by the experience by being within the team environment (Moran, 2003). This puts a question mark on how much teamwork can be taught by classroom-based learning. Marsick & Volpe (1999:3) report that “organisations are regarding formal training programs as only one learning tool and are acknowledging that informal learning has always been the most pervasive of learning in the workplace”. With learning requirements escalating, managers are realising that they need to motivate people to learn faster and to apply their knowledge both as individuals and in teams (Moran, 2003). Day (1998:30) found that “teams were one of the richest sources of informal learning”. It may therefore be possible to learn teamwork knowledge skill, and abilities (KSAs) without formal off-the-job programs. It has been observed that teams influence the acquisition of KSAs through instruction, feedback, and modelling on the job (Hackman, 1990). This observation seems to refer to technical KSAs and to norms and beliefs, without specifically considering teamwork KSAs (Stevens & Campion, 1994). Learning informally also moves the application of the knowledge closer to the work.
- iii. Previous team experience - previous experience in workplace teams may lead to development of team KSAs. Hartenian (2003) suggested that individuals were likely to learn about effective team skills and eventually begin to use them in order to receive rewards (e.g. recognition among peers for being a good team player). Prior team experience has been shown to influence decision-making accuracy (Hollenbeck *et al.*, 1998) and continuous quality improvement knowledge and skills (Irvine *et al.*, 1999). Ultimately, the level of a team’s “development maturity” may be correlated with levels of team effectiveness (Sundstrom *et al.*, 1990). Stevens & Campion (1994) have suggested that teamwork in previous jobs can contribute to developing KSA requirements for being a good team member. Eisenhardt & Schoonhoven (1990) found that higher levels of prior team experience among members in the founding team were associated with greater performance.
- iv. Reward system - the results for rewards, while somewhat mixed, tend to indicate that they have limited influence on performance. Rewards were found to have no

significant relationship with ratings of performance by managers (Campion *et al.*, 1993; Cohen *et al.*, 1996), team ratings of performance (Magjuka & Baldwin, 1991), productivity (Campion *et al.*, 1993), and process effectiveness (Wageman, 1995). Two studies found some positive relationship between rewards and forms of effectiveness. Cohen *et al.* (1996) concluded that management recognition was positively associated with team ratings of performance, trust in management, organisational commitment, and satisfaction for both self-directed and traditionally managed groups in a telecommunications firm. Wageman (1995) discovered that the highest performing maintenance technician groups were those whose rewards and tasks had either purely group or purely individual designs. Collective rewards helped motivate groups whose tasks were made interdependent, while individual rewards did the same for members of groups whose tasks reflected purely individual responsibilities.

Table 4 - Characteristics of (in)effective teams

Characteristics of effective teams	Characteristics of ineffective teams
People trust each other and seek to cooperate; People are open to constructive criticism and suggestions; Decisions are generally made by consensus; Commitment is high; People work to shared objectives and process issues are agreed; Conflict is worked through; Communications are good upwards and downwards and side to side; People listen to each other.	The organisation consists of warring cliques with low levels of trust; People feel the need to defend themselves constantly; The leader tends to dominate decision making and be domineering; Participation by members is uneven; People work in rigid ways within imposed procedures that may not prove workable or helpful; Conflict is not confronted with differences smoothed over rather than being surfaced and dealt with; Communications are restricted with management by e-mail or memo and the grapevine is overactive; Peoples' views are overlooked or dismissed.

Adapted from McGreevy (2006)

2.1.6.3 Team Motivation

Why we should motivate workers to work? A perception that the answer is quite obvious: we need to motivate workers in order to boost productivity (Michaelson, 2005).

“Motivation is the process that energizes our knowledge and skills and focuses us on our most important goals. Motivation has the effect of initiating and sustaining the level of mental and physical effort required to achieve a goal. It “initiates” by converting intention into action and thus helps us to start doing something new or different. Motivation sustains action over time

by supporting our persistence at a team task in the face of distractions and other competing work goals. It encourages mental effort when novel work goals require adapting or developing new strategies.” (Clark, 2005:46)

One of the major issues with teamwork is that it is often plagued by motivation (Karau & Williams, 1993). The theory that motivating workers achieve higher output in projects has been well researched and documented over the last decades (Schrader, 1972; Borcharding, 1976; Hargreaves, 1994; Hanna *et al.*, 2005).

Motivation is key to the success of obtaining the benefit of skilled workers' performance in a team-based environment. There has been a good effort among researchers in distinguishing the influential drivers in the domain of motivation. Harada (2004) used seven factors in ascertaining team members' motivation in her current research. According to Harada (2004), in order to attain the target objective in a successful project, organisational capabilities must be equipped with an appropriate incentive program. These organisational capabilities are the functions of people, processes, knowledge and tools, and techniques. People are the leaders in organisations. Processes dictate work and procedure. Knowledge comprises experience, skill, information, and standardization. Tools and techniques refer to equipment such as information systems. Harada (*op. cit.*) revealed that the capability of an organisation cannot be demonstrated unless people act. No matter how the other resources perform, the success of the project depends on the motivation of people within the organisation (Harada, *op. cit.*).

The most skilled team in the world will not succeed without adequate motivation (Clark & Estes, 2002). Most of the suggestions for motivating teams are exactly the same as those suggested for motivating individuals (Clark & Estes, 2002). What distinguishes motivation in the individual *versus* group is how the task is structured and how members are rewarded. Pintrich & Schunk (1996) contend that team motivation follows the same principles as individual motivation. Factors that optimize team motivation include goal-setting, efficacy, attributing success to core factors that include commitment and effort, and receiving feedback regarding team progress.

There are hundreds of studies demonstrating the reliable impact of goals on individual behaviour (Locke & Latham, 2002) and many theories focus on increasing an individual's motivation through some form of goal-setting, which, in turn, improves individual performance:

- i. Resource Allocation Theory (Kanfer & Ackerman, 1989);
- ii. Self-Regulation Theory (Vancouver, 2000); and

iii. Goal-Setting Theory (Locke & Latham, 2002).

While it is possible to intuitively hypothesise how each of the afore-mentioned goal-setting theories has applications to the perceived construct of team goals. Locke & Latham (2002:705) define goals for both individuals and teams in the following way: “A goal is the object or aim of an action, for example, to attain a specific standard of proficiency, usually within a specified time limit.”

Furthermore, Aube & Rousseau (2005:189) state that, “[...] in work settings, a team goal generally refers to the level of task outcomes that team members have to achieve”.

Using the definitions above, it can be said that a team goal establishes the bridge of success explicitly, and setting a goal at the team level means (Hays, 2004):

- i. The team should have clear and agreed-upon goals toward which it will work, and that are periodically re-evaluated and updated;
- ii. Goals define and make actionable team vision and mission;
- iii. Goals are the aims or ends desired. Like a target, goals put things in focus. They provide direction and purpose;
- iv. Goals are most effective when people know clearly what is expected in terms of performance (what the desired behaviour is) or results (what the product or deliverable expected is); and
- v. The team must reach the stated goals collectively, therefore connecting team goals to the performance or effectiveness of the team (Brown, 2009).

According to Johnson & Johnson (1997) individuals committed to achieving goals indicate a belief in the value of the goal, the desire to engage in the effort to achieve it, and a liking for both the task and the work experience of doing the task.

Gully *et al.* (1995:515) argue that, “[...] when groups are highly cohesive, and group goals are congruent with organizational goals, then the effectiveness of the group as measured by organizational standards should be very high. When groups are highly cohesive and group goals are not congruent with organizational goals, then performance is likely to be very low”.

In spite of findings that there is a positive influence of goal acceptance on productivity and performance, Evans & Dion (1991) caution that it may difficult to assume this relationship in

work groups. It is easier for sports teams or military units to accept performance goals than it is for work groups (Saenz, 2003). Work groups often have less focused goals than these other types of teams (Evans & Dion, 1991). It is easier for military units and sports teams to accept their group goals because these goals clearly represent winning or losing, and the respective consequences. In addition, it is easier to identify the criteria for group performance in sports teams and military units than in work groups. In the latter context, goals are often less tangible. In military settings, the goal is clear - win and stay alive. In sports, the goal is to simply win and not get hurt (Saenz, op. cit.). But, in organisations there are numerous and sometimes, even contradictory goals. Moreover, goals vary in their relevancy to group members. In sports and military settings, goals such as winning and survival are highly relevant to team members. In work settings, goals such as profitability may be less relevant to some members.

Several studies support:

- i. The premise that group goal-setting improves team performance (Durham *et al.*, 2000; Wegge, 2000; DeShon *et al.*, 2004; Wegge & Haslam, 2005);
- ii. Group goal-setting led to higher performance than individual goal-setting through increased goal difficulty and enhanced acceptance of assigned individual goals (Matsui *et al.*, 1987); and
- iii. Team performance is affected by the level of congruence between individual, team, and organisational sources of motivation (Locke & Latham, 1990).

2.1.6.4 Other Considerations about Teams

- i. Studies also suggest teams influence staff satisfaction (Siorska-Simmons, 2006) interpersonal relationships, communication, and coordination of care (Yeatts *et al.*, 2004).
- ii. High functioning teams have been characterized as having positive communication patterns, high levels of collaboration, coordination, and participation among team members, and low levels of conflict (Temkin-Greener *et al.*, 2004).
- iii. Hamilton *et al.* (2003) argue that talent heterogeneity increases team performance by facilitating mutual learning and by forming a social norm of higher productivity. Mutual learning may increase team performance, as the less skilful team members learn from their more talented teammates how to execute tasks more efficiently. Hence, the wider the ability gaps within a team, the higher the learning potential. On the other hand, scholars both in social psychology (Steiner, 1972) and in economics (Prat, 2002) argue that the optimal talent heterogeneity is strongly moderated by the task type.

The two fields use different wordings to express the same idea: If complementary tasks must be successfully completed for the product to have full value, every input needs to perform at or above some threshold level of proficiency to attain high team productivity. Below threshold performance by a single team member (“weakest link”) can dramatically endanger the whole team’s output.

- iv. Human resource management, modern socio-technical theory, business process re-engineering and lean production all embrace the core principles of teamwork and suggest an important link with organisational performance (Delarue *et al.*, 2008).
- v. However, the use of teams does not always result in success for the organisation (Guzzo & Dickson, 1996). Team performance is complex, and the actual performance of a team depends not only on the competence of the team itself in managing and executing its work, but also on the organisational context provided by management (Moe *et al.*, 2010).
- vi. The rarity of High-Performance teams is due primarily to the difficulty in achieving and sustaining a high level of personal commitment; in other words a personal dedication to the concept of “one for all and all for one”. This attribute is still contrary to survival precepts of most corporate polity. High performance teams are where you find them not where you wish they’d be (Katzenbach & Smith, 1993).

2.2 Motivation and Goal-setting

2.2.1 Motivation

The topic of employee motivation plays a central role in the field of management (Steers, Mowday & Shapiro, 2004). Managers see motivation as an integral part of the performance equation at all levels, while organisational researchers see it as a fundamental building block in the development of useful theories of effective management practice. Indeed, the topic of motivation permeates many of the subfields that compose the study of management, including leadership, teams, performance management, managerial ethics, decision making, and organisational change (Steers *et al.*, 2004).

Research reveals that the motivation level of employees has a direct influence on their individual output, and, furthermore, on the level of output of a team of employees (Rojas & Aramvareekul, 2003).

Human motivation is the key for achieving excellence (Schrader, 1972). The term "motivation" has several definitions and derives from the Latin word for movement (*movere*). Building on this concept, Atkinson (1964:2) defines motivation as "[...] the contemporary (immediate) influence on direction, vigour, and persistence of action [...]"; while Vroom (1964:6) defines it as "[...] a process governing choice made by persons . . . among alternative forms of voluntary activity [...]"; Campbell & Pritchard (1976: 63–130) suggest that "[...] motivation has to do with a set of independent/ dependent variable relationships that explain the direction, amplitude, and persistence of an individual's behaviour, holding constant the effects of aptitude, skill, and understanding of the task, and the constraints operating in the environment." According to Jenkins & Laufer (1982), motivation is an intangible hypothetical construct that can explain human behaviour. They revealed that motivation has a direct impact on work performance and can be positively influenced or managed by external factors such as incentives and rewards.

The generally accepted definition of motivation was put forth by Pinder (1998:11): "Work motivation is a set of energetic forces that originates both within as well as beyond an individual's being, to initiate work-related behaviour, and to determine its form, direction, intensity, and duration".

According to Kanfer, Chen & Pritchard (2008) the study of work motivation concerns the psychological mechanisms and processes that connect the person with the environment, in this way, motivation is measured by what people attend to in a given environment, how much

they act on it, and for how long (Ployhart, 2008). The Pinder definition from 1998 remains up-to-date, because Pinder already considered the concerns of the previous authors.

Some other generally accepted properties of the motivation construct include the notion that motivation varies within and across individuals, that it combines with ability to produce behaviour and performance, and that it is voluntary or “[...] something that one chooses to expend” (Mitchell & Daniels, 2003:226). According Karageorghis (2007:65) “[...] motivation is an internal energy force that determines all aspects of our behaviour; it also impacts on how we think, feel and interact with others. In sports, high motivation is widely accepted as an essential prerequisite in getting athletes to fulfil their potential. However, given its inherently abstract nature, it is a force that is often difficult to exploit fully.”

These and other definitions have three common denominators. They are all principally concerned with factors or events that energize, channel, and sustain human behaviour over time. In various ways, contemporary theories of work motivation derive from efforts to explicate with increasing precision how these three factors interrelate to determine behaviour in organisations (Steers *et al.*, 2004).

Furthermore, motivation is considered to be both a hypothetical construct and an internal set of processes (Mitchell & Daniels, 2003; Pinder, 1998). As such, motivation is not behaviour. Rather, “[...] the psychological state is motivation; the outcome or result of that state is behavioural (e.g., effort)” (Mitchell & Daniels, 2003:227).

Motivation is typically believed to be influenced by a combination of individual and contextual factors (Pritchard & Payne, 2003). Maloney (1981) and also Kanfer *et al* (2008) found a strong correlation between performance and the conducive motivational environment in employee work settings. Kochanski & Ledford (2001) indicated that worker job satisfaction and performance are a function of how well workers are motivated.

Vroom (1964) described the "performance" as a function of peoples' "ability" and "motivation" in the work place. Job satisfaction of employees is an important objective in achieving high performance in an organisation (Chung, 1977). Chung revealed that in a healthy organisation, physical and psychic energy of the organisation's members can be used for productive organisational endeavours.

According to Schermerhorn *et al.* (1988), optimum productivity is ideally achieved through effective and efficient performance and with a sense of personal satisfaction by the people doing the work. Effective performance is a measure of task output or goal accomplishment to meet the daily production targets, both quality and quantity. On the other hand, efficient

performance refers to cost-effective goal accomplishments with the realization of high outputs with less input consumed.

There are many factors that influence the level of motivation of employees (Gulezian & Samelian, 2003; Cox *et al.*, 2003). Throughout history, employers have sought to find the most successful ways of motivating employees. Historically, motivation was thought to be achieved by having punishments associated with non-performance, whereas today's thinking is more along the lines of rewarding success (Bullinger & Menrad, 2002).

The theory that motivating employees achieve higher output in projects has been well researched and documented over the last decades (Schrader, 1972; Borcharding, 1976; Hargreaves, 1994; Hanna *et al.*, 2005). Using a non-empirical approach Lam & Tang (2003) discussed strategies to motivate employees by dividing their needs into two categories: short-term needs and long-term needs. They claimed that the low-order needs, such as physiological needs, safety needs, and "belongingness" needs are short-term needs and they can be easily satisfied by introducing short-term incentive schemes such as salary increments, training programs, etc. However, once satisfied, they may no longer be the motivators for employees. Esteem needs and self-realization needs are long-term needs for employees to achieve high performance and productivity. Their suggested management measures for addressing long-term needs include job enrichment programs, life-long training and development programs, "open-door" communication, effective reward systems, and staff empowerment.

Motivation is key to the success of obtaining the benefit of skilled employees' performance in a team-based environment. There has been a good effort among researchers in distinguishing the influential drivers in the domain of motivation. Harada (2004) used seven factors in ascertaining team members' motivation in her research. According to Harada (2004), in order to attain the target objective in a successful project, organisational capabilities must be equipped with an appropriate incentive program. These organisational capabilities are the functions of people, processes, knowledge and tools, and techniques. People are the leaders in organisations. Processes dictate work and procedure. Knowledge comprises experience, skill, information, and standardization. Tools and techniques refer to equipment such as information systems. Harada revealed that the capability of an organisation cannot be demonstrated unless people act. No matter how the other resources perform, the success of the project depends on the motivation of people within the organisation (Harada, 2004).

The new economy, replete with its dot.com, e-commerce, and increased globalization (as well as the more traditional manufacturing and service firms), a motivated workforce is frequently

cited as a hallmark of competitive advantage (Steers *et al.*, 2004). Indeed, Thurow (1992) observed over almost two decades ago that successful organisations (and countries) will compete in the future based principally on the quality of both their technology and their human resources. For an organisation to have a sustained competitive advantage in the product and labour market, it needs highly committed and engaged employees (Joo & Park, 2010). Recently, many organisations try to become an employer of choice, which refers to an organisation that outperforms their competition in attracting, developing, and retaining people with business-required talent (Joo & McLean, 2006). A motivated workforce becomes a critical strategic asset in such competition (Steers *et al.*, 2004).

Over time, many theories of motivation have been developed and researched. Each separate review of these theories organizes or clusters them in a different and separate way. Here, theories are categorized roughly as Pinder (1998) did, as need, motive, and values theories; cognitive choice theories; and self-regulation theories. Each of these categorizes subsumes a number of theories. However, in this dissertation it will discuss only Goal-setting theory.

2.2.2 Goal-setting theory

For decades, goal-setting is one of the most substantially researched areas in the entire field of industrial/organisational psychology (Pinder, 1998; Bartol & Durham, 2000; Donovan, 2001; Mitchell & Daniels, 2003) and has been promoted as a golden pill for improving employee motivation and performance in organisations. Across hundreds of experiments, dozens of tasks and thousands of participants across four continents, the results are clear (Locke *et al.*, 1990): in almost all circumstances the more clearly the initial goal at the outset, the higher the performance outcome (Scoular & Linley, 2006). Encourage someone to pursue a goal that is both specific and difficult and this person is likely to perform better than when simply encouraged to do his or her best (van Mierlo & Kleingeld, 2010). In a review of four decades of goal-setting research, Locke & Latham (2006:266) claim “[...] so long as a person is committed to the goal, has the requisite ability to attain it, and does not have conflicting goals, there is a positive, linear relationship between goal difficulty and task performance.”

This is the main premise of goal-setting theory, one of the best established motivation theories in psychology (Locke & Latham, 2002).

“Goal-setting is based on the idea that most of human behaviour is the result of a person consciously chosen goals and intentions.” (Mitchell & Daniels, 2003:231)

Its main proposition is that how well one performs a task will be determined by the performance goals they hold for that task (Donovan, 2001). One of the most robust research findings is that difficult, specific goals result in higher levels of performance (Donovan, 2001; Mitchell & Daniels, 2003) have been influenced for three key aspects (mechanisms of goal-setting) (Locke & Latham, 1990; Donovan, 2001; Mitchell & Daniels, 2003):

- i. Direction of attention/effort towards task-relevant behaviours and actions;
- ii. Investment of effort and energy in goal-relevant behaviours; and
- iii. Persistence in goal-related striving in the face of difficulties or obstacles.

Six additional considerations have been identified as crucial for successful goal-setting (moderating factors): ability, goal commitment, performance feedback, task complexity and situational constraints; plus self-efficacy (Locke & Latham, 1990; Pinder, 1998; Donovan, 2001; Mitchell & Daniels, 2003).

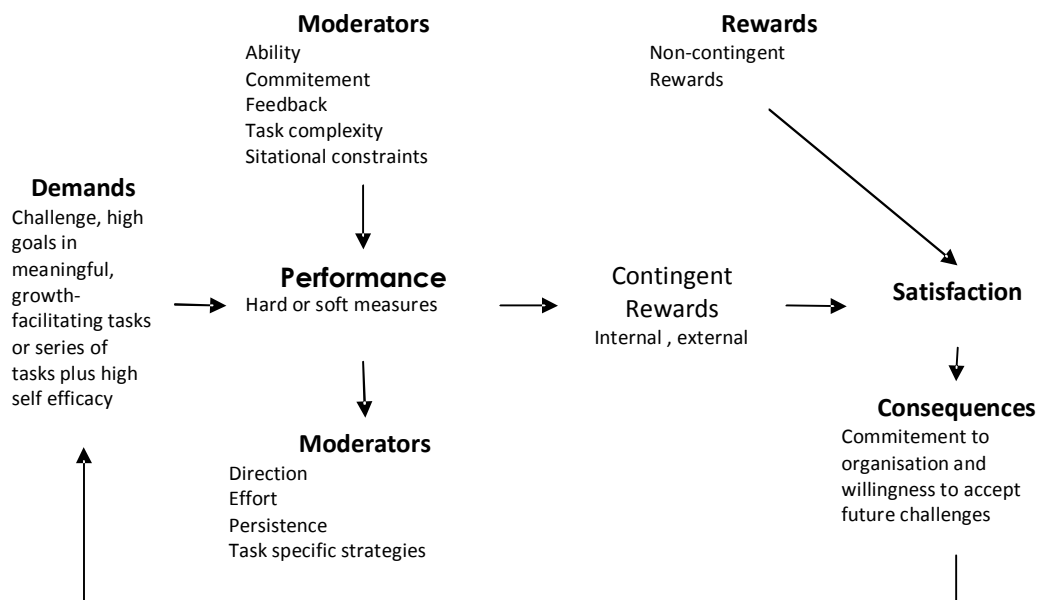


Figure 1- The High Performance Cycle (Locke & Latham, 1990)

- i. Ability - is a moderating factor, which generally limits the individual's capacity to respond to a challenge. Performance cannot increase after the limit of ability has been reached (Skinner & Roche, 2003). This has been found in many goal-setting studies. Goal-setting research has also provided some evidence that goal-setting has stronger effects among high-ability than among low ability individuals, and that ability has

- stronger effects among individuals with high goals than among those with low goals (Locke, 1982). One reason for the latter finding could be that when goals are set low and people are committed to them, output is limited to a level below what is possible (Skinner & Roche, 2003).
- ii. Goal commitment - a number of meta-analyses and reviews have supported an expectancy-value model of goal commitment (Klein, 1991; Wofford *et al.*, 1992). Specifically, goal commitment is a function of the expectancy that a goal can be achieved and the attractiveness (value) of goal attainment. Erez & Zidon's (1984) experiment nicely illustrates the influence of goal commitment on performance: if commitment declined in response to increasing goal difficulty, performance also declined. Many factors (e.g., peer group influences, incentives and rewards) influence and determine goal commitment (Locke *et al.*, 1988). Most of these influences can be explained within the framework of expectancy theory. However, it has also been shown that perceived authority is a very powerful determinant of goal commitment; goals assigned by authority figures typically affect individuals' personal goals. It is surprising that participation in goal-setting does not lead to greater goal commitment or productivity than having the authority figure simply assign the goal (Latham & Lee, 1986; Tubbs, 1986). However, there are exceptions to these findings, with research having shown that the kind of instructions used in goal-setting studies played an important role. The assignment of goals is as effective as participative goal-setting, provided the goals are accompanied by a reasonable explanation and the experimenter is supportive (Gauggel & Hoop, 2004). In the goal-setting literature expectancy of goal attainment is commonly operationalised in terms of self efficacy (Klein, 1991). Key determinants of goal attainment attractiveness include participation in goal-setting, provision of performance feedback, self-confidence, group norms, and the provision of incentives (Skinner, 2002).
- iii. Performance feedback - Goal-setting and performance feedback go hand in hand. Without feedback, goal-setting is not effective (Neubert, 1998). Performance feedback can be provided on both the outcome of goal-related striving (i.e., successful attainment or failure to obtain a desired level of performance), and the process of striving to achieve a goal (Skinner & Roche, 2003). Process related feedback can address: (i) the effectiveness of performance strategies or plans put into place to achieve a goal, and (ii) the achievement of short term goals representing incremental progress towards the final goal (Skinner & Roche, 2003). Moreover, in a meta-analysis

Kluger & DeNisi (1996) showed that feedback can also have detrimental effects; the influence of feedback is primarily determined by the participants' cognitive appraisal of the feedback (Kluger & DeNisi, 1996). Unsolicited feedback may be discarded (Roberson *et al.*, 2003) but, as the perceived value of feedback increases, people seek it actively and frequently (Tuckey *et al.*, 2002). Context, personality, and self-efficacy moderate feedback seeking. Williams *et al.* (1999) found that a feedback source that is perceived as supportive increases feedback seeking. However, people with low self-esteem lack the resilience to seek negative feedback because it may corroborate a negative self-appraisal (Bernichon *et al.* 2003). Brown *et al.* (2001) found that people with high self-efficacy use feedback to increase motivation, task focus, and effort and to decrease anxiety and self-debilitating thoughts. Renn & Fedor (2001) reported that feedback seeking increases goal-setting, which in turn increases quality and quantity of performance. On the other hand, research has also shown that goal-setting in the absence of feedback is ineffective (Erez, 1977; Locke *et al.*, 1981). Both goals and feedback are needed to affect performance. Whereas goals direct and energize action, feedback allows the tracking of progress in relation to the goal (Gauggel & Hoop, 2004).

- iv. Task complexity - seems also to have a moderating influence on goal-setting. In a meta-analysis, Wood *et al.* (1987) investigated the moderating effects of task complexity. To do this, task complexity was defined in terms of three dimensions (Wood, 1986):
- a) Component complexity (number of elements in the task);
 - b) Coordinative complexity (the number and nature of the relationship between the elements); and
 - c) Dynamic complexity (number and types of elements and the relationships between them over time).

Gauggel & Hoop (2004) found that goal-setting effects were strongest for easy tasks (e.g., reaction time, brainstorming; $d = .76$), and weakest for more complex tasks (e.g., business-game simulations, scientific and engineering work; $d = .42$). It seems that on simple tasks, the effort induced by the goal leads relatively directly to task performance. On more complex tasks, however, effort does not necessarily pay off so directly (Gauggel & Hoop, 2004). One must decide where and how to allocate effort. Moreover, one has to use strategies to be efficient and successful. Thus, in more

complex tasks, the plans, tactics, and strategies used by the individual play a more important role in task performance than they do in simpler tasks, where the number of different strategies is more limited and the strategies are generally known to all performers (Gauggel & Hoop, 2004). According to Locke & Latham (1990) setting specific and difficult goals for complex tasks may interfere with performance by encouraging a focus on the desired outcome rather than the most effective strategies to reach that point. Providing feedback on task strategies and their effectiveness can overcome this effect. The combination of a complex task and setting difficult goals may also have a significant negative impact on self confidence (i.e., perceived capacity for goal attainment) and hence reduce goal commitment (Locke & Latham, 1990). Providing feedback matched to short-term (incremental) goals is a useful strategy to increase confidence and commitment. Stock & Cervone (1990) identify three mechanisms through which short term goals may assist in achieving desired levels of performance:

- a) Assigning, and subsequently attaining, a short-term goal enhances self-efficacy in relation to obtaining the longer-term goal;
 - b) Attaining a short-term goal enhances feelings of satisfaction in relation to one's progress on the task; and
 - c) Short term goals facilitate persistence.
- v. Situational constraints - goals are less likely to be accomplished if there are situational constraints blocking performance than if there are no such blocks (Peters *et al.* 1982; White & Locke, 1981). On the other hand, one of the consequences of hard goals (especially if accompanied by high commitment and self-efficacy) is to motivate people to overcome obstacles through tenacity and perseverance (Huber & Neale, 1987).
- vi. Self-efficacy - it's a concept intertwined with goal-setting is self-efficacy (Bandura, 1997). Self efficacy means confidence in being able to perform a certain task (Bodenheimer & Handley, 2009). An intuitive way of thinking about self-efficacy is "If you think you can do something, you will probably succeed; if you don't think you can do something, you will probably fail." Self-efficacy is behaviour specific, as another simple aphorism points out: "I am 100% confident that I can get to work this morning, but I have zero confidence that I can climb Mt. Everest." Partly on the basis of beliefs about self-efficacy, employees choose what challenges to undertake, how much effort to expend at the endeavour, and how long to persevere in the face of difficulties

(Gauggel & Hoop, 2004). Self-efficacy can be measured by asking employees a few questions about their level of confidence in being able to carry out a particular task; self-efficacy measures have been validated in a number of research situations, including measures that take only one or two minutes to assess (Schwarzer & Jerusalem, 1995). A cyclical relationship exists between goal-setting and self-efficacy. When employees achieve their goals, their self-efficacy goes up. Employees with higher self-efficacy set more ambitious goals than people with lower self-efficacy. In the upward cycle, the process of achieving goals increases self-efficacy which in turn stimulates the setting of higher goals (Bodenheimer & Handley, 2009). A downward cycle develops when people fail to meet their goals, causing self-efficacy to drop, leading to goal abandonment. Success breeds further success while failure leads to more failure (Locke & Latham, 2002).

In summary, a specific, challenging goal has maximum effect when the individual has high self-efficacy and ability, there is commitment to the goal, there is feedback showing progress in relation to the goal, the task is simple, and there are no blocks to performance.

2.2.2.1 Rewards

Internal and external rewards provide the individual with what he or she wants or considers appropriate or beneficial. Once high performance has been demonstrated, rewards can become important as inducements to continue. Internal, self-administered rewards that can occur following high performance include a sense of achievement based on attaining a certain level of excellence, pride in accomplishment, and feelings of success and efficacy (Gauggel & Hoop, 2004).

The experience of success will depend on reaching one's goal or level of aspiration (Lewin, 1938) or making progress toward the goal. Satisfaction will also depend on the perceived instrumentality of performance in attaining longer-term goals (Locke *et al.*, 1970). The self rather than others is typically given credit for successful actions (Locke, 1976). Higher satisfaction is experienced if the success is attributed to the self rather than to external factors such as luck (Weiner, 1986). Success and failure can affect subsequent self-efficacy. Bandura (1988) has noted that high self-efficacy itself can produce positive affect just as low self-efficacy can lead to negative affect, including anxiety and depression. The external rewards that are most likely to be tied to performance in relation to goals are pay, promotion, and recognition.

2.2.2.2 Goal-setting with Teams

The basic principles of goal-setting for individuals and teams are very similar. For example, the foundation of successful team goal-setting remains in setting specific team performance goals of sufficient difficulty rather than easy or vague “do your best” goals (Weldon & Weingart, 1993). However, goal-setting for teams differs from individual goal-setting in at least two important ways (van Mierlo & Kleingeld, 2010):

- i. First, by definition, teams are characterized by interdependence among members that needs to be taken into account when setting goals; and
- ii. Second, teams offer the potential for setting goals at multiple levels of performance.

Balancing individual and team goals is particularly challenging. A simple additive relationship does not exist between individual and team goals. For instance, when team performance requires coordination and cooperation between team members, the sum of the parts is different from the whole. This means, assigning a team performance goal and separate individual performance goals is likely to result in team members focusing predominantly on their individual goals to the detriment of the overall team’s performance (Crown & Rosse, 1995). In other words, actions of greatest benefit to an individual’s performance may not be the most effective or efficient strategies to achieve the broader team goal (Skinner & Roche, 2003). When teams are performing tasks that require significant cooperation and interdependence a more effective approach is likely to be setting individual goals focused on maximising each member’s contribution to the team’s capacity to perform effectively in addition to an overall team goal (Crown & Rosse, *op. cit.*). In this way, the team’s performance is made the priority, rather than each team member focusing exclusively on his or her particular input and performance (Skinner & Roche, 2003).

In team performance, the role task strategies are especially important because most of the time teams are faced with a constant need for coordination and cooperation, stemming from the task interdependence that is inherent to team work (Kozlowski & Bell, 2003). Task strategies refer to “the choices members make about how they will go about performing a given group task” (Hackman & Oldham, 1980:179). An important distinction in task strategies is that between competitive and cooperative strategies (Crown & Rosse, *op. cit.*; Tauer & Harackiewicz, 2004). Competitive strategies involve the attempt to outperform other team members, whereas cooperative strategies involve working together to attain a common goal (Tauer & Harackiewicz, *op. cit.*). Investigations on task strategies in teams indicate that goals

can be set at multiple levels of performance and suggest that goal level is a major determinant of the adoption of performance-enhancing task strategies (Crown, 2007a). Depending on whether goals refer to individual performance, group performance, or both, different goal types can be distinguished in a group context: team goals only (TG), individual goals only (IG), a combination of individual and team goals (IG + TG), or no specific goals (NSG). The potential for setting these different types of goals is inherent to team contexts and represents a unique feature of goal-setting for teams compared to goal-setting for individuals. As such, goal type is an important issue in team goal-setting (van Mierlo & Kleingeld, 2010). Crown & Rosse (op. cit.) and Crown (op. cit.) offer detailed analyses of IG effects specific to highly interdependent tasks. These authors distinguish two types of IG:

- i. Egocentric individual goals that are framed in terms of maximizing individual performance; and
- ii. Groupcentric individual goals that are framed in terms of maximizing the individual contribution to the team outcomes.

Van Mierlo & Kleingeld (2010) found that a groupcentric individual goal triggered cooperative strategies and high team performance, especially in combination with a TG, whereas an egocentric IG resulted in competitive strategies and hindered team performance. The results of Crown & Rosse (op. cit.) and Crown (2007b), do suggest a motivational component of goal-setting in interdependent teams, showing higher effort and performance in teams with a specific and difficult TG compared with a NSG.

Table 5 - The key principles of team goal-setting

<ul style="list-style-type: none"> • Ensure team <u>member participation in goal-setting</u> and strategy development;
<ul style="list-style-type: none"> • Develop <u>strategies to coordinate team members'</u> contribution to team performance;
<ul style="list-style-type: none"> • Ensure team members possess the relevant <u>skills and knowledge</u> through education and training (this approach is likely to increase team members' <u>self confidence</u> in achieving their set goals);
<ul style="list-style-type: none"> • Set <u>specific goals</u> for the group and individual team members;
<ul style="list-style-type: none"> • Provide <u>organisational support</u> to facilitate team members in obtaining their goals.

From: Skinner & Roche (2003)

2.2.2.3 Goal-setting and Sports

Goal-setting has received some attention and its use has been supported by coaches, personal trainers and fitness magazines (Williams, 2001). A goal in sports is defined as a desired level of proficiency or a standard in performance (Petitpas *et al.*, 1997). Locke & Latham (1985) identified goal-setting as a technique that they believed could be used to increase both skill and confidence of athletes in competitive sports. Burton (1989) reported the results of a field study investigating the effectiveness of goal-setting course of a season for members of a university swimming team. He found that swimmers who effectively applied goal-setting strategies achieved greater performance improvements than those who were less effective in their application of goal-setting strategies.

Research by Weinberg *et al.* (2000) on Olympic athletes gave an interesting insight into the importance of goal-setting in high performance when it was found that despite the fact that these were Olympic athletes, winning was not as important to them as was improving their performance. Shaw *et al.* (2005) described the story of American swimmer John Naber, who provides one of the best-known examples of applied goal-setting. In 1972, Naber set winning the Olympic 400-meter backstroke gold medal in 1976 as his long-term goal. His time in 1972 was about four seconds slower than the predicted goal medal time, so he set himself the goal of being four seconds faster by the time of the 1976 Olympics. He broke his long-term goal down into short-term goals of one second faster each year, which was further broken down to .08 seconds per month and 0.02 seconds per week. His approach was successful, and he won the gold medal in 1976.

Burton & Raedeke (2008), in their research, supported the fact that goals setting affect performance by directing attention, mobilizing effort, increasing persistence, and motivating strategy development. Goals are like magnet that attracts athletes to higher ground and new horizons. They give their eyes a focus, their mind an aim, and their strength a purpose. Moreover Bueno *et al.* (2008) also asserted that both motivational and emotional mechanisms were important mediators in improving the efficacy of goal-setting in endurance sports.

Researchers have suggested that short-term goals may yield more substantial and long-lasting self-regulated behavioural changes (Bandura, 1982; Carver & Scheir, 1982). The short-term goals provide immediate incentives and feedback about athlete's performance. Long-term goals are, most likely, too far removed in time to maintain the athlete's effort or attention (Stout, 1999). Combined short and long-term goals seem to yield the greatest performance improvements as compared to using long-term goals and/or short-term goals alone

(Tennenbaum *et al.*, 1991). Athletes who know the proximity of their goals can recognize whether the goal is difficult and realistic (Bandura, 1982; Locke & Latham, 1985; Tennenbaum *et al.*, 1991). Thus, there seems to be an increased likelihood of goal achievement once the athletes have defined their goal (Stout, 1999).

An important distinction can be made between outcome and performance goals (Kingston & Hardy, 1997). Outcome goals are product orientated and characterized by social comparison and object outcome like winning a certain match or competition. Performance goals are progress focused and characterized by the emphasis on a certain execution, movement or achievement of a performance standard (e.g. shoot three times in a certain time). These performance goals have been split into process and performance goals by Kingston & Hardy (1994, 1997). Process goals focus on improving form, technique and strategy (e.g. keeping the elbow high during the shot) and performance/productivity goals focus on improving overall performance/productivity (e.g. attack faster more times). Perceived control and increased self-confidence are the result from setting process and performance goals (Burton, 1992; Filby *et al.*, 1999) so that goal-setting is a useful tool taught in skills training.

Ward & Carnes (2002) investigated the impact of self-set goals during practice and matches. Five football players were selected who had been identified by their coach as consistently poor in their execution of certain target skills during both practices and match. Following an intervention programme in which the players were taught how to set goals related to these target skills, the players achieved improvements during a match. Their initial (pre-test) success in target skill execution was 60% to 80% of their opportunities. Post-test results indicated an increase in success rate to 90% to 100% of their opportunities. Setting clear goals must be followed by a commitment to do the work necessary to achieve those goals (McKenzie & Hodge, 2000).

Difficulty is an important aspect in goals. A difficult goal is defined by Locke (1991) as a goal set at a level at which no more than 10% of participants can achieve. Jackson & Henderson (1995) found that athletes, regardless of gender or ability level, chose moderately difficult goals over easy and difficult goals. Starters on a sports team have been found to use goal-setting more frequently and effectively than reserves (Weinberg *et al.*, 1993). Further, those athletes who consistently perform at a higher ability level use goal-setting more frequently and effectively than lower ability level athletes (Weinberg *et al.*, 1993). The athletes who have more control over their goals consistently perform more effectively (Weinberg, 1994). A study revealed that elite athletes set more challenging, yet realistic goals than their less skilled rivals (Weinberg, Burton, Yukelson & Weigand, 1993). Challenging yet realistic goals assigned by a coach for

athletes are effective only if the athletes accept them as their own (Weinberg, 1994). Complete acceptance can only occur when the athlete knows the goal specificity, goal difficulty, goal proximity, and perceives the goal to be realistic (Weinberg, 1994). Weinberg argues that the athlete is the only one who has the capability of making internal comparisons and setting personal standards against which to evaluate the specificity and difficulty of the goal (Weinberg, 1994). Therefore, an athlete's input is necessary in the selection and method of achievement of all aspects of goal-setting (specificity, difficulty, proximity, frequency, effectiveness, effort, commitment, and orientation).

Although a coach may lack the knowledge of the inner comparison processes and standards of the athlete, a coach will most likely have knowledge about skill development. This knowledge of skill development may help the athlete set realistic goals. For example, using this knowledge the coach could help define training that is necessary to achieve the goal. A supportive coach may be able to assist athletes in setting effective goals that encourage effort, commitment, and accountability (Stout, 1999). However not all athletes are the same; they come to the sports setting with differing physical and mental abilities, sports skills, work ethics, and psychological dispositions (Balaguer *et al.*, 2002).

Nicholls (1989), in particular, proposed that athletes can evoke at least two different ways of construing their competence:

- i. They can employ a task-involved; and
- ii. Or an ego-involved conception.

When task-involved, an athlete's main purpose revolves around task mastery, gaining skill or knowledge, exerting maximal effort and performing one's best. In this case, perceptions of ability are self-referenced. When ego-involved, athletes are concerned with the adequacy of one's ability and the demonstration of superior competence. Ego-involved athletes perceive a successful event when they think that they performed better than the others or equally with less effort (Balaguer *et al.*, 2002). According to Nicholls (1989:95), goal orientations reflect "[...] individual differences in proneness to the different types of involvement [...]" and tendencies in terms of how success is defined in particular achievement settings.

In terms of the potential association between performance and goals, it has been suggested that an emphasis on task goals "[...] leads to flexible, creative responding that allows a focus on the task at hand, and consequently, to better performance at least for some kinds of tasks

(while an ego involved) motivational state can lead to feelings of pressure, distraction from task engagement, and deteriorated performance” (Elliott & Dweck, 1988:7).

This line of inquiry has revealed a positive association between task-orientation and performance (VanYperen & Duda, 1999) and a negative relationship when ego-orientation is high (and task-orientation is low) and/or the situation is highly ego-involving and perceptions of ability are low (Kingston & Hardy, 1997; Sarrazin *et al.*, 1999).

Balanguer *et al.* (2002:296) argue that “[...] task-orientation was positively associated with athletes’ perceptions of individual improvement in the physical aspect of their game and with team improvement in the technical and tactical facets of handball. When handball players perceived that their coaches created a more task-involving environment, they perceived greater improvement in all the dimensions studied (i.e., technical, tactical, physical, psychological, and overall performance) with respect to their individual game.” More specifically, they found that in a TS like handball when athletes perceived a more task-involving and less ego-involving atmosphere they were more likely to view their current coach as closer to their “ideal” coach and feel that he/she was relevant to the training process. In general, these findings suggest that coaches are seen as doing what coaches are supposed to do best, namely helping their athletes get better and maximizing training, when the team environment they create encourages task involvement. The present results are also aligned with past work of Smith, Zane, Smoll & Coppel (1983). These researchers reported that coaches who were taught, via coach effectiveness training, to provide more positive reinforcement, exhibit less punishment, and engage in more instructional behaviours, and were rated as better teachers by their athletes. Athletes who played for trained coaches also enjoyed their sports more and were less likely to drop out when contrasted with players who played for coaches in the control group (Barnett *et al.*, 1992).

Sadeghi, Mohd-Sofian, Omar-Fauzee, Marjohan, Rozita & Cheric (2010) argued that athletes believed using goal-setting before competition could affect on increasing motivation, attention, self-confidence, and focusing on championship. This idea confirms Bueno *et al.* (2008). On the other hand, (Burton & Raedeker, 2008) argued that goal-setting not only increase playing skill, techniques, performance, but also increase focus and concentration that can be necessary for winning the competition.

2.2.2.4 Characteristics of Goals in Sports

Burton *et al.* (2001) identified the following five characteristics of goals that have been found to be effective in sports:

- i. Focus - Goals must be focused, either on process, on performance or on outcome. Process goals refer to qualitative improvements in form, technique and strategy, while performance goals refer solely to improving (e.g. number of points scored), and outcome goals refer specifically to winning or losing.
- ii. Specificity - A specific goal is more effective than a general goal because it allows the athlete to assess the discrepancy between his/her current status and the desired status. This certainty contributes to consistency in practice attempts since the final goal has specific attributes.
- iii. Valence (value) - Goal-setting has been found to be particularly effective when focused on new skills or on difficult skills, because the athlete recognises the importance of achieving the goal if his/her performance is to improve.
- iv. Proximity - Long-term goals enhance performance most effectively when short-term goals are used to guide development and to indicate progress along the way. Because short-term goals are “nearer” to the athlete’s current status, they can be achieved more quickly, which contributes to motivation to continue striving toward the more distant long-term goal.
- v. Collectively - Team goals can enhance performance as effectively as individual goals. Team goals are necessary when the activity is TS, rather than an individual one. Individual goals in team situations can support the achievement of team goals.

Essential guiding principles for the application of goal-setting that Locke (1996) formulated are depicted in Table 6.

Table 6 - Guidelines for successful goal-setting

1. The more difficult the goal, the greater the achievement.
2. The more specific or explicit the goal, the more precisely performance is regulated.
3. Goals that are both specific and difficult lead to highest performance.
4. Commitment to goals is most critical when goals are specific and difficult.
5. High commitment to a goal is achieved when the individual is convinced that the goal is important and attainable.
6. In addition to having a direct influence on performance, self-efficacy influences: <ul style="list-style-type: none"> • The difficulty level of the goal chosen or accepted; • Commitment to goals; • The response to negative feedback or failure; • The choice of task strategies.
7. Goal-setting is most effective when there is feedback showing progress in relation to the goal.
8. Goals affect performance by affecting the direction of action, the degree of effort exerted, and the persistence of action over time.

From Locke (1996)

According to Bovend'Eerd (2009) performance goals should be S.M.A.R.T. goals — they should be Specific, Measurable, Achievable, Realistic, and Timely.

Table 7 - S.M.A.R.T. Goals

Letter	Major Term	Minor Terms	
S	Specific	Significant, Stretching, Simple	Well defined; Clear to anyone that has a basic knowledge of the project.
M	Measurable	Meaningful, Motivational, Manageable	Know if the goal is obtainable and how far away completion is; Know when it has been achieved.
A	Attainable	Appropriate, Achievable, Agreed, Assignable, Actionable, Action-oriented, Ambitious, Aligned, Aspirational	Agreement with all the stakeholders what the goals should be.
R	Relevant	Realistic, Results/Results-focused/Results-oriented, Resourced, Rewarding	Within the availability of resources, knowledge and time.

T	Time-bound	Time-oriented, Time framed, Timed, Time-based, Time boxed, Timely, Time-Specific, Timetabled, Time limited, Trackable, Tangible	Enough time to achieve the goal; Not too much time, this can affect project performance.
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Adapted from Bovend'Eerd (2009)

2.2.2.5 Relationship of Goals to Performance

Danish, Taylor, Hodge & Heke (2004) identified that one of the advantages of using sports examples to signify goal accomplishment was that the goals in sports are typically tangible, relatively short-term and usually measurable. These characteristics of goals in sports allow sports to provide individuals with clear opportunities to see the value in goal-setting and to experience success in setting and achieving goals. However, Munroe-Chandler, Hall & Weinberg (2004) provided the following observations about the use of goal-setting in sports:

- i. Performance is enhanced when goals are moderately difficult;
- ii. Goal-setting provides athletes with direction and focus that will result in motivation if those athletes are committed to their goals and accept them;
- iii. Goals plus feedback produce better performance than goals alone;
- iv. Time pressures, stress, tiredness, academic pressures and social relationships negatively affect goal achievement;
- v. Achievement of both short-term and long-term goals provides reinforcement (and motivation); and
- vi. Goal-setting is most effective for athletes using multiple goal strategies in order to perform.

Kyllo & Landers (1995) focused on the importance of knowing the difference between challenging goals and unrealistic goals. They made the point that goal-setting will not affect the performance positively if the individual does not have the ability to master the task being performed. This is supported by the view of Weinberg & Gould (2003) who noted that goal-setting is an extremely powerful technique for enhancing performance, as long as the process is implemented correctly. It is much easier to setting goals than achieving them. The most common problems that obstruct athletes from achieving the goals they have set were identified by Petitpas, Champagne, Chartrand, Dandis & Murphy (1997) as:

- i. Lack of knowledge - the athlete may have set an inappropriate goal because does not have information enough about the amount of time and effort needed to achieve a goal;
- ii. Lack of skill - the athlete may not have an accurate perception of his/her athletic conditional performance capacities;
- iii. Lack of self-confidence - the athlete may not have the belief that he/she is capable of achieving the goal that has been set, so he/she will obstruct the amount of effort and persistence brought to working toward the goal; and
- iv. Lack of social support - the athlete will need encouragement and other forms of support in order to achieve a goal. Family, friends, coaches, journalists are essentials.

Weinberg (1996) limited his presentation of the problems that obstruct the effective use of the goal-setting process in sports to the following:

- i. Insufficient feedback;
- ii. Failure to recognize individual differences, each athlete is a single case;
- iii. Failure to set S.M.A.R.T. goals; and
- iv. Setting too many goals, to set priority goals is a must.

However, the benefits of goal-setting are bigger than the problems that obstruct the effective use of them. Wilson & Brookfield (2009) found that athletes should be encouraged to utilize process goals (the processes in which the athlete wants to engage to perform satisfactorily) not only has a positive influence over motivation but also impacts upon an athlete's persistence with the training program. Also, coaches should educate athletes to set their own goals to help maintain the positive motivational and persistence impact of the goal-setting intervention when the coach is not able to provide support in the setting and monitoring of goals.

2.2.2.6 The Effectiveness of Goal-setting in Sports

The physical and mental challenges of improving task and job performance in business organisations have a lot in common with the challenges of improved performance in sports (Locke & Latham, 1985).

Regarding the critical aspect of generating goal commitment in the process of goal-setting, Locke & Latham listed the following methods drawn from the business literature and applied to sports:

- i. The coach's team must explain the reason for each goal (e.g., why a specific increase in strength is needed) in relation to performance improvement;
- ii. The coach's team must be supportive of the athlete's efforts to achieve the goal. A positive relationship between the coach and the athlete will facilitate commitment;
- iii. Participation in goal-setting may not be as critical as participation in determining the strategies that will be implemented. The coach's team must find ways for athletes to have input and some control over the process of how they will strive for a goal;
- iv. The coach's team must ensure that training sessions focus on progress toward goal achievement. This commitment by the coach will impact on the commitment of the athletes;
- v. Selection of athletes may be necessary. Because ability can be a limiting factor in goal achievement in sports, it is possible that some athletes will have to be dropped from a programme if they are not able to achieve specific goals. This process can result in greater commitment among those who have been selected to continue;
- vi. Rewards and recognition for effort, progress and achievement will enhance commitment.

Despite the logic of the transfer of principles and methods from business organisations to sports, the use of goal-setting as a strategy for performance improvement has been more successful in non-sports settings than in sport-settings (Burton *et al.*, 2001). This difference in effectiveness was attributed to the following factors by Weinberg & Weigand (1993):

- i. Athletes become more skilful, they are operating closer to their performance potential. Locke and Latham (1990) presented evidence that as an individual approaches the limits of his/her ability, goal-setting may become less effective because ability factors restrict the amount of improvement that can be achieved;
- ii. The sports environment is a complex and often unpredictable one. Weinberg & Weigand (1993) noted the large number of complex individual and team skills needed in most sports, all of which can impact on individuals achievement of his/her goals. Locke & Latham (1985) identified the key difference between goal-setting in individual

versus TS as the need for coordination and cooperation in TS situations. In order to motivate cooperation they suggested the identification of team goals;

- iii. The issue of individual differences may be underrated. Locke & Latham (1990) indicated that individual differences, especially self-efficacy, have a significant impact on how individuals respond to goal-setting, particularly for complex tasks.

Burke, Shapcott, Carron, Bradshaw & Estabrooks (2010) show the importance of setting team goals in sports and of focusing on collective outcomes such as the percentage of shot efficacy as a team. They also emphasize the important roles of previous training activity level and aggregated self-efficacy in the team-goal/ team-performance relationship and underscore the need for sports professionals to continually develop, and encourage the development of, strategies that can be used to enhance players' confidence regarding training activity.

2.2.2.7 Problems with Goal-Setting Theory

Despite the large number of convincing studies supporting the goal-setting approach, there are several problems with goal-setting theory (Donovan, 2001):

- i. The solitary focus on task performance; the theory is unable to predict or explain other work-related behaviours. By focusing on task performance the theory focuses on quantity goals, thereby neglecting the impact of conflicting quality and quantity goals (Donovan, 2001);
- ii. The quality of goals has been neglected (Gauggel & Hoop, 2004). Both quantity and quality are important components of performance in many jobs or daily life situations. Although both aspects are important, there has been little research on the quality of goal performance. Although quality is subordinate to quantity in many situations (e.g., work performance), quantity is not the sole dimension of performance;
- iii. Goal-setting theory does not consider goal conflicts, although they obviously occur in many daily life situations and may have dysfunctional effects on performance (Michalak *et al.*, 2004). Multiple goals might arise from multiple role sets, supervisors, or multiple system requirements;
- iv. The influence of goal difficulty and specificity has been investigated mainly as it affects intensity of behaviour. Locke & Latham (2002) found that the higher the set goal, the less satisfied the performer is likely to become upon meeting any goal. However, there are only a few studies that have considered the direction (choice) and

- persistence of behaviour. No study has investigated direction, intensity, and persistence simultaneously (Gauggel & Hoop, 2004);
- v. The nature of criteria used in goal-setting research is limited (Gauggel & Hoop, 2004). In order to meet the specificity requirement of goal-setting, performance measures generally take the form of countable criteria. Experimental tasks (e.g., solving anagrams or sorting cards into piles) yield concrete scores, such as “number of cards sorted” or “number of errors made”. However, real life criteria are less clear and sometimes very subjective (Gauggel & Hoop, 2004);
 - vi. Schweitzer *et al.* (2002) argued that goals motivate not only constructive behaviour, but also unethical behaviour. They found that participants with goals were more likely to misrepresent their productivity than were participants attempting to do their best. This was true both for goals with and for goals without incentives. They also found that proximity to the goal influenced behaviour. Participants were more likely to over-state performance when they were close to, rather than far from, reaching the goal. Taken together, these results identify a serious “side-effect” to setting goals, and offer insight into the mechanics of this problem. Prescriptively, managers should be vigilant for unethical behaviour and motivated communication (Schweitzer & Hsee, in press) when setting goals, particularly when employees are very close to reaching the goal. In these cases organisational controls and transparency may be particularly important. Finally, results from this work suggest that educators should include an ethics “warning” when they teach students about goal-setting;
 - vii. The goal-setting theory takes a static approach to describing motivation. In other words, it predicts or explains behaviour within a single performance episode, not over the course of multiple episodes (Cornejo, 2007). “That is, much of goal-setting theory focuses on the impact of performance goals on immediate task performance with little regard for how such goals are likely to be maintained or revised in response to relevant performance feedback” (Donovan, 2001:63);
 - viii. Finally, although numerous studies have found that goal-setting leads to performance improvement, there are only a few studies that have tried to explain how goal-setting works by analyzing the dynamics responsible for goal-setting effects, e.g., the process by which task–goal attributes affect performance (Schmidt *et al.*, 1984). It seems likely that there are boundaries beyond which goal-setting will not have an effect. For instance, Huber (1985) argued that, for complex or heuristic tasks, goals may be

dysfunctional because they may serve to misdirect an individual's attention. In addition, goals may be dysfunctional if an individual is already stressed or under pressure or when the assignment of a specific, difficult goal creates excessive pressure and degrades performance.

Despite these criticisms, goal-setting theory is still one of the most straightforward, well accepted, and empirically supported theories of motivation today (Cornejo, 2007).

2.2.2.8 Summary

Goals work. In business organisations or in sports, a carefully managed goals strategy is very effective in enhancing performance – far superior to vague aspirations or no goals at all. Psychological research demonstrates that difficult, high level goals prompt superior performance much more successfully than vague, do-your-best, or no goals. The strength of goal-setting effects has remained consistent and as a behavioural technique, goal-setting is a highly robust performance enhancement strategy. Goal-setting is fundamental to the relationship between motivation and performance (e.g. the acquisition of skills, task mastery) (Venables & Fairclough, 2009). It is also important to consider this note: goal-setting as a motivation theory is considered an open one, because there is no finite number of findings that can be made with regard to the variables and/ or theories that may be related to the construct (Locke & Latham, 2006).

Focus on the process

Crucially however, many teams fall into the trap of setting the wrong goals without understanding why. So the challenge for executives and sports coaches is to understand how the process of goal-setting works. If people can understand more about the processes which lead to poor performance, people are in better shape to address them for next time. By making sure the process is understood and key goal-setting principles are applied, the executive or coach can promote setting goals that will enable individuals to assess their current situation and determine what needs to be done in order to be successful and reach their full potential. McKenzie & Hodge (2000) reminded the enthusiasts of goal-setting that the setting of goals is only one step in the improvement of performance. They noted that it is the focused effort and persistence in striving to achieve the goal that enables the individual to achieve improvement and/or success.

Implications for Managers and Coaches

Sustaining commitment at the individual level is about much more than having a cognitive understanding of the ultimate goal. In business settings, managers have to work hard to

achieve a common understanding about key goals and the means to achieve them, especially when working with capable people who have strong opinions. Whether working in an individual or team setting, this can be a difficult task in organisations.

At the individual level, self-control is an important dimension of goal attainment. In this regard, individual capabilities such as self regulation (effectively managing one's own thoughts, feelings and behaviours) and self reinforcement are essential personal attributes. Top athletes in all walks of life are able to realistically appraise their strengths and weaknesses and systematically review progress. When working with teams, a useful starting point is to decide on strengths and weaknesses profile for each individual and on the basis of this, to devise detailed plans which offer the best fit for the skills blend people need to achieve the end goal. Developing a system which supports short term goal attainment is also important; a collaborative working environment will help to support progress so team members work with and for one another. Gaining a shared agenda for action, monitoring improvements, feedback and making performance adjustments along the way will help to optimise goal attainment. For goal-setting to work in sports, simple clarity about the end point is insufficient. To make progress, people need to be personally motivated beyond the end goal for the process to work.

2.3 Productivity Measurement and Enhancement System (ProMES)

2.3.1 ProMES Definition

Productivity Measurement and Enhancement System (ProMES) is a method that provides high-quality feedback to members of an organisational group via a measurement system constructed by the group personnel (Davids, 2003). The method is based on creating clarity of goals and objectives for the group, informing about how well the group is meeting all their objectives and in which areas further investments to improve productivity are worthwhile (Schmidt & Kleinbeck, 1997). The main idea is to offer a tool to do a better work while at the same time helping personnel feel a sense of ownership in the resulting system, and empowerment in determining important aspects of their work (Larbi-Apau & Moseley, 2010). The group constructs the system by defining their objectives, identifying productivity indicators for each objective, and developing contingencies for each indicator (Davids, *op. cit.*). These contingencies are the heart's system and they provide the possibility to add indicator scores after weighing them in a non-linear way. The overall sum score tells the group how well it performed in comparison with prior periods and others groups. Together, the productivity indicators completely define what the group is responsible for, i.e. the indicators measure the group's contribution to organisational goal attainment (Algera *et al*, 1997a). One of the key elements in ProMES is the systematic feedback that is based on the organisational goal-setting and objectives that the group should meet (Algera *et al*, 1997b). The group obtain regular, high quality feedback about how is doing with respect to the goals and objectives that have to be met (Larbi-Apau & Moseley, 2010), this information then serves as a tool that leads to more efficient and effective ways of performing task effort and strategies (Davids, *op. cit.*). In other words, personnel must not only work harder, but also work smarter. The system is developed and agreed upon by both group personnel and management, and provides an overall index of productivity (Pritchard *et al*, 2011).

ProMES is an intervention aimed at enhancing the productivity of work groups (or teams) within organisations through performance measurement and feedback (Pritchard *et al*, *op. cit.*).

2.3.2 ProMES process

ProMES is an intervention that relies on feedback to let all team members know their levels of performance; this knowledge then serves as a tool that leads to more efficient and effective

ways of performing tasks (Pritchard, 1990). The system is developed and agreed upon by both employees and management, and provides an overall index of productivity (David, op. cit.).

The basic idea behind ProMES can be seen in Figure 2. The process starts with the identification of the objectives of the organisation. From these objectives, a productivity measurement system is developed that is consistent with the objectives. Next, the data resulting from measuring productivity are feedback to members of the organisation in the form of regularly occurring formal feedback reports. These feedback reports are the basis of discussions about how to improve productivity. As productivity is increased, the organisational objectives are more fully achieved. Hence, one can think of ProMES as developing a measurement system which is then used as a feedback system with the goal of improving productivity.

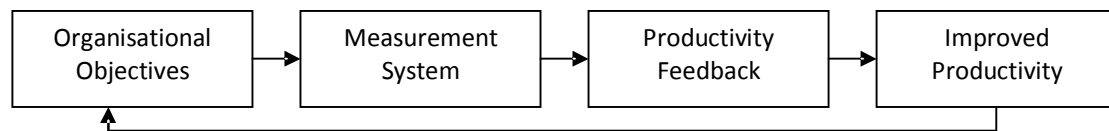


Figure 2 - The Basic ProMES Approach. Adapted from Pritchard *et al* (2011)

ProMES is based on the theoretical model of motivation developed by Naylor, Pritchard, & Ilgen (1980), which was later refined by Pritchard & Ashwood (2007). Founded upon the notions of expectancy theory (Vroom, 1964; Mitchell & Daniels, 2003) the model states that motivation is captured by the following process (Figure 3):

- i. Efforts are applied to actions - individuals or teams perform task behaviours, or acts. Acts can be described as the “doing” of something, such as writing an article, cooking, or playing a handball match. Acts then combine to form products (results), the end result of task behaviors (David, op. cit.). For example, playing a match (an act) produces wins or losses (products or results);
- ii. Actions achieve certain products (or results) - products are then subject to evaluations from supervisors, management, the self, and others (David, op. cit.);
- iii. Products (or results) are then evaluated - evaluations determine whether the amount or quality of the product (or result) is at a desirable or undesirable level (David, op. cit.);
- iv. Certain outcomes result from these evaluations - outcomes are then given on the basis of these evaluations. Outcomes can be intrinsic or extrinsic and be given by the self or

others (David, *op. cit.*). Examples include pay, punishments, feelings of accomplishment and rewards. Outcomes then impact the individual's need satisfaction. Needs are relatively permanent preferences for different outcomes such as safety, self-esteem (Maslow, 1954), growth, relatedness (Alderfer, 1972), achievement or power (McClelland, 1953), among others. Whenever these needs are met, need satisfaction in the form of positive affect results (Pritchard *et al.*, 2002);

- v. The outcomes satisfy certain needs - these components dictate an individual's motivational force. Motivational force is the degree to which an individual perceives that changes in effort expended on different acts will result in changes in anticipated need satisfaction (Pritchard *et al.*, *op. cit.*).

Motivation Force is the process that determines how individuals or team energy is used to satisfy needs. More specifically, the motivation process is defined as a resource allocation process through which energy is allocated across actions or tasks to maximize the person's anticipated need satisfaction (Pritchard *et al.*, 2007).

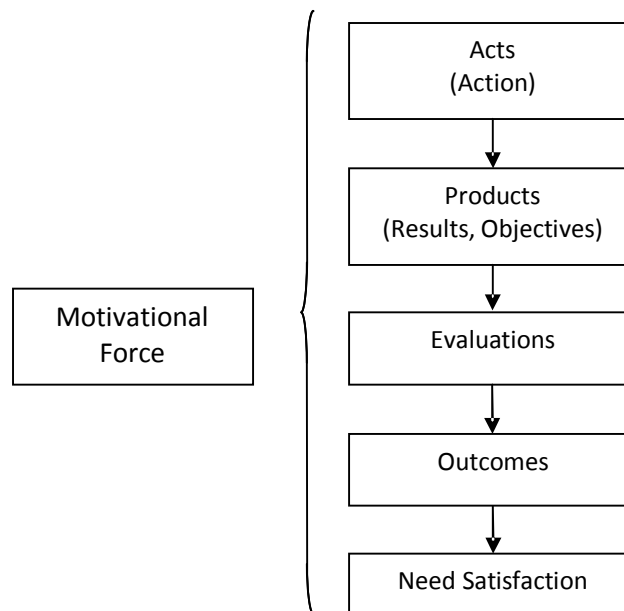


Figure 3 - The Model of Motivation. Adapted from Pritchard *et al* (2007)

The motivation process can be broken down into a series of components, shown in the right side of Figure 3. Energy is allocated across possible actions or tasks (handball team's strategy training). If energy is applied to actions, results are generally produced; training (an action)

generates a technical, strategic or physical adaptation (a result or product). Thus, a result is the team's output. When results are observed and an evaluator places the measured result on a good-to-bad continuum, this produces evaluations. Multiple evaluators evaluate the team's training including the team's players, coaches who give feedback, journalists, team supporters, etc. After these evaluations are made, outcomes occur. These are intrinsic outcomes such as a feeling of accomplishment from training or performing (playing) well, or extrinsic outcomes such as forms of recognition, incentive bonus, salary raise, new contract, etc. Outcomes get their motivating power because of their ties to need satisfaction. The more needs are satisfied, the greater the positive affect that is experienced; the less needs are satisfied, the greater the negative affect.

2.3.3 ProMES implementation

A main feature of the ProMES approach is that it allows the incorporation of different performance measures and, thus, comes up to the multi-dimensional nature of performance criteria typical for most group tasks in organisations (Schmidt & Kleinbeck, 1997).

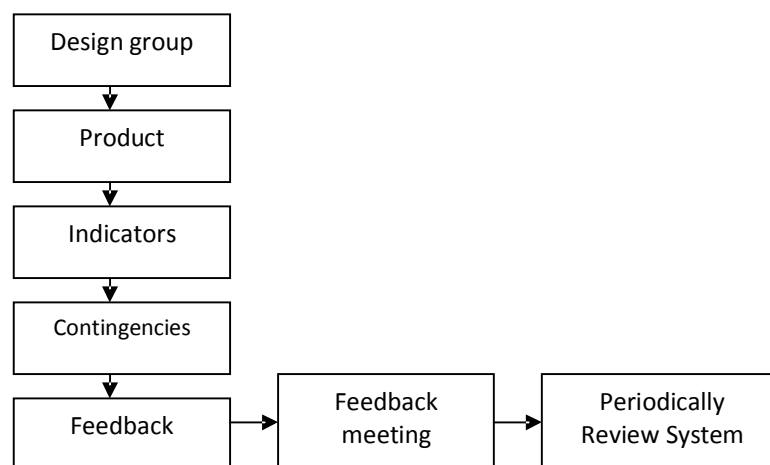


Figure 4 - Steps in the ProMES process. Adapted from Pritchard *et al* (2011)

This is achieved by the implementation of a series of steps (Pritchard, 1990; Pritchard, Paquin, *et al.*, 2002; Pritchard *et al*, 2011):

- i. Design Group - this is the group of people who will be primarily responsible for developing the measurement and feedback system. It is composed by: one or two supervisors and one or two facilitators to guide the design group through the process and representatives from the team/unit are designated as design group member. An important feature of ProMES is that the people actually doing the work are directly

involved in its development and participate heavily in the design and implementation of the measurement and feedback system Pritchard, Paquin, *et al.*, 2002).

- ii. Identify product (objectives, results) - every organisation has a set of activities or objectives that it is expected to accomplish, which ProMES call products (or results). ProMES utilizes a process of collaboration, through discussion to consensus, in which team's representatives, supervisors (in these case coaches), and upper level management explicitly define the objectives of the team and develop measures that reflect how well those objectives are being met (Pritchard, 1990). Objectives are typically general in nature such as effectively deal with production priorities, maximize resources, meet training needs, optimize customer/supporter satisfaction, and provide a safe working/training. A trained facilitator (the main role of the facilitator is to guide the team/unit through the four phases of the process of designing products, indicators, contingencies, and the feedback procedure) directs the efforts of the design team, often comprised of a subset of target team/unit members and supervisors (in these case coaches). Employees (in these case athletes) then receive regularly scheduled feedback regarding their performance over time and meet to discuss ways to improve performance. A single index of unit effectiveness can be calculated based on an aggregate of the individual measures, and this overall score can be tracked over time. The participatory development, focus on feedback, and single index of productivity differentiate ProMES from other productivity enhancement programs (Weaver, 2008).
- iii. Develop indicators - Once the products are determined, the third step is to develop indicators of these products. The multi-dimensional nature of performance criteria is further considered when adequate indicators for the objectives have to be developed or found (Schmidt & Kleinbeck, 1997). An indicator is a quantifiable measure describing how well the team/unit is generating the product in question. To identify the indicators, supervisors (in these case coaches) and team's representatives are asked to think of things they would use to show how well they are generating their products. There may be one or several indicators for a given product. Typically, there are 4-6 objectives and 8-12 indicators (Pritchard, Paquin, *et al.*, 2002). Some indicators will already be available; some will have to be newly developed. However, only then is it ensured that all important performance aspects are made salient by the resulting measurement and feedback system (Schmidt & Kleinbeck, 1997).

In the second and third steps of developing a ProMES system, the design group has to answer questions such as “What are we responsible for?” and “How can we measure how well we succeed in realizing our responsibilities?” In other words, the design group has to concentrate on the question of what kind of contributions it can make to organisational goal attainment, and by which indicators these contributions can be measured in a valid way (Algera *et al.*, 1997a). The intervention results in a single set of objectives and quantitative indicators to be used for feedback (Pritchard *et al.*, 2002). Besides, since each indicator is not equally important for the productivity of a team/unit, the ProMES approach captures their differential importance by what is called the contingencies (Schmidt & Kleinbeck, 1997).

- iv. Establish contingencies - the next step is to establish the contingencies. The establishment of contingencies is a unique feature of ProMES, as compared to other performance measurement systems (Algera *et al.*, 1997b). The term “contingency” should not be confused with the behaviourist use of the term to mean the relationship between behaviour and a reinforce (Pritchard, 1990). In contrast, ProMES use the term to mean that a contingency specifies the relationship between the indicator score and the contribution that, from the point of view of the organisation, the score of the indicator makes to the overall productivity of the team (see Fig. 5 for an example). By means of this translation of performance indicator values to effectiveness scores, a total performance score can be calculated by adding up all effectiveness scores. The total set of contingencies for a team should be by the team to decide on how to spend their time and energy to get a maximum total score (Algera *et al.* 1997b). An example contingency is shown in Figure 6. The indicator is the percent of Shot Success (Goals/Shots) during a handball match. The horizontal axis shows levels of the indicator measure ranging from a low of 55% to a high of 85%. The vertical axis is effectiveness, defined as the amount of contribution being made to the team during the match. It ranges from -100, through 0 to +100. The zero point is defined as the amount of the indicator that just meets expectations. It is the level of output on the indicator that would neither be praised nor criticized; it is simply meeting team’s expectations. Indicator amounts that are above this expected level get a positive effectiveness score. The higher the unit is above this expected level, the more positive the effectiveness score. Indicator amounts below the expected level receive a negative effectiveness score. The contingency relates indicator amounts to the effectiveness scores and is generated for each indicator. A formal step-by-step process is done to develop the contingencies. This procedure is described in Pritchard (1990) and in

Pritchard *et al.* (1993). It essentially consists of design group develops contingencies using a discussion to consensus process like that used with objectives and indicators [this process would help team/unit members become more aware of their impact on others both within and outside of the team, this explicit demarcation can enhance task significance (Weaver, 2008)]. The basic idea is for the facilitator to break down contingency development into a series of moves that the design group can do. The first move is to identify the maximum and minimum realistic levels for each indicator and the design group must ask, "What is the maximum/minimum feasible value that the team/unit could do on each of the indicators under ideal conditions?"

In the example, total shots success contingency, the design group decided that the minimum realistic value was 55%, the maximum realistic value was 85%. Next, the design group decides on what is the minimum level of acceptable performance on each indicator. This is defined by the facilitator as the point of just meeting minimum expectations. Below this point would be performing below minimum expectations on the indicator, above this point would be performing above minimum expectations. The design group, including the supervisor (in these case coach), discusses this value until consensus is reached. This point then becomes the point of zero effectiveness on the contingency. This value is 70% shots success in the example contingency and as shown in the graphic, it is associated with a value of zero on the effectiveness scale.

Next, the design group ranks and then rates the effectiveness levels of the maximum and minimum indicator levels for each of the indicators (see Table 8). To do this, the facilitators ask the design group to first rank order the maximums in terms of the contribution of each to the overall effectiveness of the team/unit. In other words, they should rank the indicator maximums in terms of overall importance to the unit's work. A good way for the facilitators to get at this is to ask, "If each of the indicators were at their zero points and only one of the indicators could be at the maximum, which indicator would create the most value for the organisation?" The group discusses this until consensus is reached.

The maximum that the unit personnel believe to be the most important is given a rank of 1. The question is then repeated for the second most important thing the team/unit could do and this indicator is given a rank of 2. The process continues until all the indicators are ranked. Ties are permissible, where the maximums of two or more indicators get equal ranks. Next, the maximum with the highest importance rank is given an effectiveness value of +100, and the group is asked to rate the other

maximums relative to this. The value of +100 is arbitrary; it is simply a reference point to use in determining the relative value of the other maximums. The idea is that the most important thing the group could excel at is given the value of +100 and the rest of the maximums are to be compared to this one to determine how important each is relative to the standard of the most important one. To do this, the group is told to rate the other maximums as percentages of the +100 maximum. For example, if the maximum of a given indicator was only half as important to the overall effectiveness of the team/unit as the most important maximum, they would give it a value of +50. It may be helpful for the facilitator to explain this concept to the design group in terms of percentages. For example, is the indicator ranked second in importance 80% as important as the first indicator, 50% as important, etc.? This process results in an effectiveness score for the maximum and minimum indicator levels for each contingency.

The group then identifies, for each indicator, the general shape of the contingency between the zero effectiveness point and the maximum effectiveness value and between the zero effectiveness point and the minimum effectiveness value, and then finalizes the location of the function in the contingency. As a final phase, the group reviews the completed contingencies for accuracy. When this approval process is complete, the measurement system is considered complete. Three things are particularly noteworthy about the contingencies:

- a) Firstly, the contingencies essentially scale how much output is done (the indicator level) relative to how good that is (the effectiveness score). In doing this, they formally define what is expected by the team/unit and by management (in these case coaches) which helps personnel do the work (Mali, 1978; Muckler, 1982). In ProMES, the expected level of output on each indicator is defined by the zero effectiveness point. This scaling of how much too how good also indicates the evaluation to be expected for all levels of output. It is valuable to get descriptive feedback on what was done, for example, if the team had a shots success of 75%, this translates into an effectiveness score of +60, very positive and well above minimum expectations. However, it is also valuable to know how each level of output is evaluated by the team and by coaches, i.e., evaluative feedback. With the contingencies agreed upon, the individuals in the team and their coaches know in advance how well or bad each level of output is considered. If a team gets an effectiveness score above zero, the team has exceeded expectations. The higher the score, the more they have exceeded expectations. Negative effectiveness scores mean the unit is below expectations;

- b) A second feature of the contingencies is that they capture differential importance, this means they offer a way of identifying priorities for improvement. Not every indicator is equally important, and the overall slope of the contingency captures this differential importance. For example, in the example indicator, going from a Shot Success of 70% to 75% would mean a gain in effectiveness of +60 points, but a gain from 75% to 80% would be a gain of only +20 points. This suggests that improving Shot Success should be a high priority when it is below 75%, but a lower priority when it is above 75%. Pritchard *et al.* (2007b) found evidence that teams/units do use this improvement priority information that is provided by the contingencies. Finally, because contingencies rescale each measure to the common metric of effectiveness, a single, overall effectiveness score can be formed by summing the effectiveness scores for each indicator. For example, if a team has five indicators and they correspond with contingency effectiveness scores of +60, +40, -20, -40, and +80, the overall effectiveness team's score would be the sum of these numbers, which is 120. A score of zero means that the team is meeting expectations; its productivity is neither particularly good nor bad. As the score becomes positive, they are exceeding expectations. The more positive the score, the more they are exceeding expectations. As the score becomes negative, they are below expectations. The ability to simply sum effectiveness scores is one of the major advantages of the system. Because the contingencies already reflect the relative importance and the non-linearity of the indicators, a simple summing reflects the overall effectiveness of the team/unit. The closer the team/unit is to the maximum score, the closer it is to their best possible productivity;
- c) The third noteworthy feature of the contingencies is that they capture non-linearity. The relationship between how much an organisational team/unit does on an indicator and the amount of contribution (effectiveness) that level of the indicator makes to the overall functioning of the organisation is frequently not linear (Campbell & Campbell, 1988; Pritchard, 1992; Pritchard *et al.*, 2007b). It is common, for example, that once the Shot Success reaches a point that satisfies the coaches, further improvements in quality are not especially valuable. That is, a point of diminishing returns is reached. The contingencies in ProMES capture this non-linearity. For example, the contingency in Figure 5 for Shot Success shows that there is a point of diminishing returns after 75%, a clear non-linearity. For this contingency there is big gain in effectiveness for going from 70% attendance to 75%, but little gains between 75% and 80%. It is also important to

note that these non-linearities are very common. The vast majority of the contingencies developed in ProMES have some degree of non-linearity.

Table 8 - ProMES Contingency Worksheet

Indicator	Maximum Level	Minimum Expected Level	Minimum Level	Rank of Max .	Effectiveness Score: Maximum	Rank of Min.	Effectiveness Score: Minimum
Shot Success	x%	xx%	xx%	1	+xx	1	-xx
Technical Faults	xx%	xx%	xx%	2	+xx	2	-xx
Goalkeepers Success	xx%	xx%	xx%	3	+xx	3	-xx
2 Minutes Suspensions	xx%	xx%	xx%	4	+xx	4	-xx

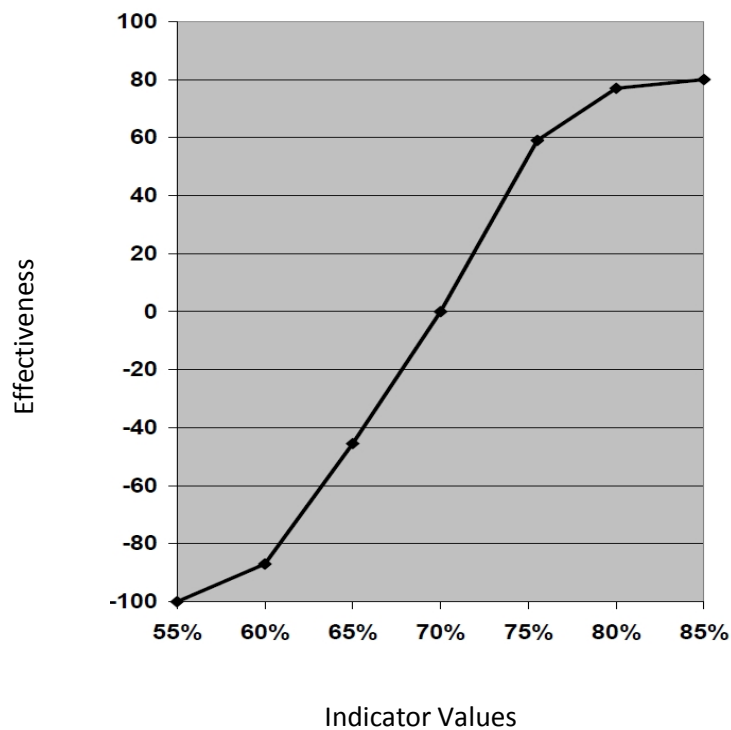


Figure 5 - Examples of ProMES Contingencies

- v. The last step is to put the system together as a feedback system. Team’s staffs collect data on the indicators and a printed feedback report is produced and distributed to each member of the team/unit after each performance period (monthly,

championship, matches series, etc.) or match. This is because ProMES is a system that uses rather global performance indicators and contains only outcome feedback. This feedback report includes a list of the objectives and indicators, the performance level on each indicator, the corresponding effectiveness score (e.g., for the example above, an effectiveness score of +60 for an indicator level of 75% shot success), and the overall effectiveness score which is the sum of the effectiveness scores across the indicators. Also included are plots of indicator and effectiveness scores over time and a graphic presentation of the feedback. A feedback meeting is held after each performance period or match to review the feedback report. As part of the feedback meeting, supervisor and coaches identify ways of making improvements, and use the feedback report to evaluate the success of improvement attempts made in the past. According to Algera *et al.* (1997b:24)

“[...] in the philosophy of ProMES, feedback results can be used to improve performance by greater task effort (working harder) or by developing new task strategies (working smarter). Thus, performance is measured on a rather aggregate level. As such, it gives no direct cues for improving task strategies on a detail level. In the application of ProMES in practice, especially in industrial settings (Algera & Van den Hurk, 1995), operators often ask for feedback on crucial process parameters to be able to react immediately on process disturbances; for example, trend information on process parameters.”

The components of the measurement system, objectives, indicators, and contingencies, are reviewed periodically to see if changes need to be made. The feedback report also contains historical data. The change in each indicator from the previous match to the current match is shown as indicated in the middle section of table 9. The indicators are shown along with the indicator value from the last match, the value for the current match and the change in effectiveness score from last match to the current match. This allows team/unit members and supervisor/coaches to see where things are improving and declining. Another feature of the feedback report is the identification of priorities for improvement. It is frequently difficult for the team/unit to know where to focus their efforts for improvement (Earley, Connolly & Ekegren, 1989). The contingencies are an approach to doing this. They identify the effectiveness score associated with each value of an indicator. As can be seen from the contingencies in Figure 6, it would be quite easy to note the effectiveness score for the current level of an indicator and then calculate the change in effectiveness that would occur if the team/unit improved on

that indicator by any specified amount. This possible gain in effectiveness can be calculated for an increase on each of the indicators. An example is shown in the bottom section of table 9, which is also part of the typical ProMES feedback report. For each indicator, the value for the current period is shown in the first data column, the indicator value that represents one interval of improvement is shown in the next, and the gain in the effectiveness score is shown in the last column. These effectiveness gain scores identify the impact of making improvements on each of the indicators on the unit's overall effectiveness. This indicates what the priorities should be for improving overall productivity. Because it is based on the contingencies, it is based on organisational policy that was agreed to by all. Also included in the report is a plot of the overall effectiveness score over time. In addition, graphs of changes in the effectiveness score for each indicator are sometimes included or at least posted somewhere in the work area.

An example of the feedback report for the abbreviated example is shown in table 9:

Table 9 - Example Feedback Report

Basic Productivity Data		
Objectives & Indicators	Indicator Value	Effectiveness Score
Shot Success	xx%	+xx
Technical Faults	xx	+xx
Goalkeepers Success	xx%	0
2 Minute Suspensions	xx	-x
Overall Effectiveness Score = +xx		

Change Data: From Last Match To Current Match			
Indicator	Indicator Value for Last Match	Indicator Value for Current Match	Effectiveness Change from Last Match
Shot Success	xx%	xx%	-xx
Technical Faults	xx	xx	+xx
Goalkeepers Success	xx%	xx%	+xx
2' Suspensions	xx	xx	+x

Improvement Priorities For Next Match			
Indicator	Indicator Value for Current Match	Indicator Value for Next Match	Gain in Effectiveness
Shot Success	xx%	xx%	+xx
Technical Faults	xx	xx	+xx
Goalkeepers Success	xx%	xx%	+xx
2 Minute Suspensions	xx	x	+x

2.3.4 Advantages of ProMES

ProMES is designed as a productivity measurement system which improve productivity through motivation. While it can be adapted to function as a management information system or for the control function, it is primarily designed as a motivational tool where feedback about productivity is given to people to help them do their work better and more effectively (Pritchard *et al*, 2011). It is important that all personnel agree on the purpose of doing the measurement, because this can improve productivity of the organisation or some groups in the organisation by having people work more effectively (Pritchard *et al*, op. cit.).

2.3.4.1 Index of productivity

According to Pritchard *et al* (op. cit.) the ProMES ability to provide a single index of productivity, and as well sub-indices of the important indicators of productivity. Sub-indices are necessary to allow personnel to see which aspects of productivity are good *versus* those that need improving. The single index allows the productivity of a complex team/unit to be summed into one easily communicable number. This number is necessary to help management, supervisors, and unit personnel gain an overall sense of how the team/unit is doing.

2.3.4.2 Validity and Accuracy

Validity of the measurement system in the sense of the measurement accurately reflecting the level of productivity, as well as perceived validity of the system, is maximized by carefully reviewing the indicators and contingencies in the design group, getting feedback from members of the unit not on the design group, and the management review. The high level of participation especially helps the perceived validity. This effort to ensure validity, maximize participation, make the system transparent, and give regular feedback helps in the belief in the accuracy of the feedback (Pritchard *et al.*, 2007).

2.3.4.3 Reliability and Flexibility

Reliability over time is maintained by using the same system over time. However, a change in management or in the environment could cause changes in priorities in the organisation. If changes need to be made, it is clear what has changed by the revision of indicators and/or contingencies (David, 2003).

2.3.4.4 Comparison

Teams/Units in an organisation will most likely be engaged in different functions. ProMES has the ability to directly compare these units even though they are doing different things (Pritchard, 1990). An effect of the direct comparison is that it allows for competition across teams/units based on each team's/unit's percent of maximum productivity. In situations where such comparisons have been made, this competition was clearly present between teams/units (Pritchard, 1990). It was friendly in nature and the effect on productivity appeared to be positive.

2.3.4.5 Participation

While participation has shown conflicting findings (West & Anderson, 1996) there is considerable evidence that participation on issues of importance to employees (in this case athletes) can have positive effects on performance and attitudes, especially acceptance (Cawley *et al.*, 1998). Participation is important, in part, because it enhances perceptions of procedural justice and voice (Cawley *et al.*, *op. cit.*). Participation is a key part of ProMES. Most of the members of the design group are members of the team/unit, and these members are encouraged to discuss the development process (products, indicators and contingencies) with those not on the design group. In addition, the entire team/unit or a representative participates in the feedback meetings. Not only do they develop the system, but they also have to defend their work to higher management. These features should also increase perceptions of procedural justice, voice and develop a sense of ownership of the system (Pritchard *et al.*, *op. cit.*).

2.3.4.6 Motivation and Feedback

In ProMES the emphasis is on human motivation (Algera *et al.*, 1997b). In particular, according to the resource theory (Naylor *et al.*, 1980), the total set of contingencies should be used by the work group to decide on how to spend their time and energy to get a maximum total score (Algera *et al.*, 1997b). Feedback and goal-setting, as central elements in the ProMES approach, are supposed to enhance motivation. Very many laboratory experiments and field studies illustrate that feedback combined with goal-setting leads to performance improvement

(Algera, 1990). Specific difficult goals direct attention and behaviour and influence the level of effort spent (Van Mierlo & Kleingeld, 2010). Feedback provides information on progress towards the goal that enables the employees to learn, develop, and improve on the job (Zhou, 2003). More frequent, specific, and accurate feedback enhances performance (Pritchard *et al.*, 1978; Ilgen *et al.*, 1979; Geister *et al.*, 2006).

Scholars have argued for a number of important feedback features (Bobko & Colella, 1994; Murphy & Cleveland, 1995; West & Anderson, 1996; London, 2003; Smither *et al.*, 2005). The feedback system should include both a description and evaluation of performance. This is done in ProMES by including both indicator and effectiveness scores. Because the system is known and totally transparent, people know what the evaluations will be.

In their review of the effects of feedback on performance, Kluger & DeNisi (1996) found four feedback characteristics that were related to performance improvements across all the analyses they performed:

- i. The largest effects from feedback occurred when the task was familiar;
- ii. There were cues that supported learning;
- iii. Feedback provided information on discrepancies between performance and a standard; and
- iv. The feedback did not threaten the self.

ProMES is used with tasks that are well-known. The feedback reports and feedback meetings support learning new ways of doing the task. The effectiveness scores reflect deviation from the standard of minimum expected performance. The fact that the unit has participated in the design of the system and feedback is typically done at the group-level should reduce the threat to self.

2.3.4.7 Role clarification

Role conflict and ambiguity have been linked to performance and attitude variables (Tubre & Collins, 2000). Through the process of developing, refining, and getting approval for the objectives, indicators, and contingencies, personnel are helped to more clearly understand their roles (Rizzo *et al.*, 1970). This process of role clarification should have positive motivational effects in and of itself.

2.3.4.8 Goal-setting

An increase in motivation should also be seen because this system helps goal-setting (Tubbs, 1986). ProMES also includes aspects of goal-setting (Locke & Latham, 2002; Latham & Pinder, 2005). While goal-setting clearly includes formal, relatively public, agreed-upon levels of output to strive for (formal goal-setting), it also includes less formal processes such as private and public intentions to act (Lock & Latham, 2002). ProMES implicitly if not explicitly includes many aspects of goal-setting:

- i. Provides feedback with regard to what employees need to start doing, stop doing, or continue doing to achieve a desired end state (i.e., performance goals);
- ii. Feedback meetings focus on the behaviours necessary to attain desired end states; the benefits of focusing on behavioural goals have been discussed elsewhere (Brown & Latham, 2002);
- iii. ProMES encourages the setting of learning goals where people are urged to discover strategies or processes for attaining the desired outcome (Seijts & Latham, 2000).

2.3.4.9 Information

The system indicates which activities the personnel should be doing and the importance of these different activities. It provides the ability to see what is good and bad productivity in each area. ProMES also helps the unit know how they are doing overall. A formal, quantitative statement of priorities for increasing productivity that is useful in guiding action to improve productivity is developed by the system (Pritchard *et al*, op. cit.).

2.3.4.10 Teams

Literature on what makes teams effective has implications for ProMES. The intervention is primarily used with groups/teams and when used with individuals, there are typically group feedback meetings with all the individuals in the unit. In a major study of thousands of teams in the British National Health Service, West (2007) assessed three team characteristics:

- i. Whether the team has clear objectives;
- ii. Whether members work closely together to achieve these objectives; and
- iii. Whether they meet regularly to review team effectiveness and how it could be improved.

West (2007) found the more these characteristics were present in the team, the better was satisfaction, turnover intentions, errors, stress, injuries, and violence and harassment from patients and colleagues. ProMES includes all three of these characteristics.

Other research on teams reviewed by Salas *et al.* (2006) and by Salas *et al.*, (2004) has identified characteristics that make teams more effective:

- i. Holding shared mental models;
- ii. Having clear roles and responsibilities;
- iii. Engaging in a cycle of prebrief-performance-debrief;
- iv. Cooperating and coordinating; and
- v. Using multiple criteria.

Objectives, indicators and contingencies can be seen as a type of shared mental model of the work which is developed by the team/unit and then used in the feedback meetings (Pritchard *et al.*, 2007). Roles and responsibilities are clarified through the measurement system and applied during feedback meetings (Pritchard *et al.*, 2007). The ongoing feedback meetings are a type of prebrief-performance-debrief cycle where new ways of doing the work are developed and then evaluated in subsequent feedback meetings (Pritchard *et al.*, 2007). Cooperation and coordination are encouraged through the feedback meetings. Multiple criteria of performance are included in the multiple indicators (Pritchard *et al.*, 2007).

Team/Unit goals increase motivation by affecting a task performer's perceptions of the relationship between acts and products, products and evaluations, and evaluations and outcomes (Larbi-Apau & Moseley, 2010). Goals at the team/unit level, rather than individual goals, contribute to less intra-group conflict and greater goal commitment and group performance quality (Tjosvold, 1991). Having clear team/unit goals contributes to the use of more efficient communication strategies during task execution, better performance, and shared mental models of each other's informational requirements (Larbi-Apau & Moseley, *op. cit.*). Furthermore, clear team/unit goals are consistent with behaviours that seek to clarify each team/unit member's roles and responsibilities, sharing information, and anticipating how to deal with high workload or unexpected events, and making agreements about backing each other up (Cannon-Bowers, & Salas, 1998).

West (1990) hypothesized and later empirically supported (Anderson & West, 1994; West, 1994) four dimensions of team climate that influence innovation:

- i. Presence of a vision and shared objectives - shared objectives are the objectives and indicators (Pritchard *et al.*, 2007);
- ii. Participative safety - participative safety comes from the opportunity to participate in system design and in feedback meetings (Pritchard *et al.*, 2007);
- iii. Task-orientation and climate for excellence - task-orientation is supported by the development of the measurement system, and task-orientation and climate for excellence is supported by using the feedback to make improvements (Pritchard *et al.*, 2007); and
- iv. Group norms in support of innovation - norms supporting innovation are fostered by using the feedback reports to make improvements (Pritchard *et al.*, 2007).

The attempts to make improvements in task strategy done in the ProMES feedback meetings can be seen as a type of innovation. ProMES fosters this climate for innovation (Pritchard *et al.*, 2007). Agrell & Malm (2002) found that all four of these innovation climate dimensions improved after implementing ProMES in groups of Swedish police.

Another factor in team performance is group reflexivity, which is defined as “[...] the extent to which group members overtly reflect upon the group’s objectives, strategies and processes, and adapt them to current or anticipated endogenous or environmental circumstances” (West, 1996:559).

The development of the measurement system and the feedback meetings are designed to promote group reflexivity. Agrell & Malm (2002) found group reflexivity increased after the use of ProMES.

2.3.4.11 Autonomy

According to Weaver (2008) ProMES could also foster autonomy since it relies on performance measures which are under member’s control. Control over performance measures refers to the degree to which variation in the amount of effort employees allocate to those tasks underlying the performance measures results in actual variation in the performance measures themselves (Pritchard *et al.*, 2007b). Utilizing measures whose variance is primarily determined directly by employee effort increases the amount of autonomy available at both the individual and team level. ProMES also fosters autonomy through the use of feedback meetings, during which teams work together to develop improvement strategies and evaluate their effectiveness (Weaver, 2008).

2.3.5 ProMES and Task and Outcome interdependency

Lewin (1948) once stated that the essence of a team/unit (or group) is the interdependence among its members. Indeed, interdependence among individual employees is often the reason for forming teams/units in the first place (Shea & Guzzo, 1987). Interdependence is also often taken to be a defining characteristic of teams/units (Shea & Guzzo, 1987; Campion *et al.*, 1993; Cohen & Bailey, 1997). Interdependence among team/unit members is typically defined very broadly as: “[...] as a situation in which the outcomes for individual group members are affected by each other’s actions” (Johnson & Johnson, 1989:23).

For example in handball, coaches may depend on each other in planning the sport’s season whereas doctors, administrative managers, operational managers and sport’s manager must often depend on each other during project collaboration.

Interdependence in teams/units can have a number of antecedents: specific technical and task requirements, task and environmental uncertainty, role differentiation, the distribution of skills and resources among the team/unit, the way goals are defined and achieved, and the way performance is rewarded and feedback is provided (Tjosvold, 1986; Wageman, 1995). According to a number of authors (Shea & Guzzo, 1987; Johnson & Johnson, 1989; Saavedra *et al.*, 1993; Wageman, 1995), two basic forms of interdependence are the result of these antecedents: task and outcome interdependence.

- i. Task interdependence refers to the manner in which and extent to which team/unit members must exchange information and resources or actually work together to complete their jobs (Brass, 1985). According Straus & McGrath (1994) task interdependence can be also defined as the degree to which the behaviour of one team/unit member controls the performance of others, and the degree to which team/unit members must actually work together given the design of their jobs.

The degree of task interdependence typically increases as the work becomes more difficult and the personnel require greater assistance from others to perform their jobs (Van der Vegt *et al.*, 2000).

With regard to task interdependence, researchers have focused on either the team/unit level (Saavedra *et al.*, 1993; Jehn, 1995; Campion *et al.*, 1996) or the individual level of analysis (Kiggundu, 1983; Brass, 1985; Pearce & Gregersen, 1991). Those who study task interdependence at the team/unit level of analysis consider this variable as a characteristic of the team/unit as a whole. As a consequence, they assume all members of a particular team/unit to react in a uniform way to task

interdependence conditions. Those who study task interdependence at the individual level of analysis, on the other hand, consider it as a characteristic of individual job incumbents, unaffected by overarching team/unit or organisational factors (Schmidt & Kleinbeck, 1997).

The ProMES approach lies somewhere in between these two extremes. First, task interdependence is conceptualized as an individual-level variable because the degree of interdependence within work teams may vary from person to person. Simultaneously, however, task interdependence may be team-related (Van der Vegt *et al.*, 2000).

Consider, for example, the way handball teams tend to play. In those teams task interdependence is obviously high, but whereas the field players are mutually task interdependent in the highest possible degree, the goalkeeper can perform their tasks relatively independent of the others. So, in addition to acknowledging that teams may differ with regard to the degree of task interdependence, it's possible to assume the degree of task interdependence to vary across group members, irrespective of the degree of group-level task interdependence (Van der Vegt *et al.*, 2000). This means that both between-team and within-team variation in the degree of task interdependence can occur depending on, for example, the similarities and differences in the job types of individual employees (players) across and within teams (Schmidt & Kleinbeck, 1997).

- ii. Outcome interdependence is the degree to which team/unit members are presented with team/unit goals (Deutsch, 1973) or provided with group feedback (Campion *et al.*, 1993; Saavedra *et al.*, 1993; Wageman, 1995). Team/unit goals are defined as the level of performance to be achieved by all members of a team/unit together; such goals reflect the purpose and mission of the team/unit (Perrow, 1961). For example, a handball team can be expected to win 80% to 85% of annual matches. Group feedback involves information on the actual state of the team relative to a reference value or standard (Algera, 1990). As pointed out by Weldon & Weingart (1993), team goals and team feedback create quite similar conditions: in teams receiving either team goals or team feedback, individual motives can only be satisfied when the team performs well.

The concept of outcome interdependence figures most prominently in studies at the team/unit level (Shea & Guzzo, 1987; Mitchell & Silver, 1991; Saavedra *et al.*, 1993;

Wageman, 1995). Most of the studies are based on Deutsch's (1949) interdependence theory, research on team/unit goal-setting (Mitchell & Silver, 1990; O'Leary-Kelly *et al.*, 1994), and the team design literature (Shea & Guzzo, 1987; Wageman, 1995; Campion *et al.*, 1996). In keeping with these literatures, it's possible to conceptualize outcome interdependence as a team property. Without a team/unit, individuals cannot be presented with team/unit goals and team/unit feedback (Van der Veegt *et al.*, 2000).

It should be noted that task and outcome interdependence are mutually independent constructs: task interdependence can exist without outcome interdependence, and vice versa (Wageman, 1995). For example, handball players may cooperate on highly interdependent tasks during a match, without receiving clear team goals or team feedback. Conversely, swimmers may be held accountable for a collective goal and receive group feedback while completing individual tasks (Mitchell & Silver, 1990).

In handball (or other TS) the developed measurement and feedback systems apply to the performance of a team as a whole. That is, the measures and the feedback reflect an aggregation of the activities of all team members (Prudente *et al.*, 2004). However, the acceptance and effectiveness of such team-based measures are by no means unconditional, but should strongly be influenced by the nature of the team's task, especially the task interdependence within a team (Saavedra *et al.*, 1993). Hence, with an increase in task interdependence, the requirements for coordination, cooperation, and communication also increase in order for the team to perform at a high level (Schmidt & Kleinbeck, *op. cit.*).

According to Saavedra *et al.* (1993), the importance of task interdependence for the effectiveness of team-based performance measures and feedback is mainly due to the fact that the type of measures and feedback (individual or team) stimulates the development of corresponding (individual or cooperative) work strategies which might more or less be in congruence with what is required by the task. Team-based measures and feedback usually promote the development of cooperative rather than individual work strategies (Matsui *et al.*, 1987). Therefore, these measures and the feedback should increasingly improve team/unit performance, the higher the task interdependence is within the team/unit. This is because under conditions of high task interdependence, team-based measures and feedback direct the attention of team members specifically to those demands of their work (cooperation, coordination, etc.) that have to be met for performing effectively. Conversely, under conditions of low task interdependence, group-based measures and feedback should impair

team/unit performance, since they would focus the attention of team members on cooperation and coordination when none are required (Schmidt & Kleinbeck, op. cit.).

Instead, for work team/unit settings characterized by low task interdependence, individual-based measures and an individual feedback should be more effective because they stimulate group members to develop task strategies that maximize individual performance (Schmidt & Kleinbeck, op. cit.). Saavedra *et al.* (op. cit.) have found considerable evidence in favour of this view. By that view, another kind of compatibility is pointed out which also has to be taken into account in order for ProMES to be applied successfully. This kind of compatibility has its focus on the relation between what is required by a given team/unit task and the team/unit processes induced by providing both team-based or individual-based performance measures and feedback (Schmidt & Kleinbeck, op. cit.). Accordingly, using team-based measures and feedback, the acceptance and effectiveness of ProMES can be expected to be particularly high under conditions of high task interdependence. This does not imply that ProMES cannot or should not be applied in individual work settings or in work team settings in which the nature of the team's task require team members to work independently (Schmidt & Kleinbeck, op. cit.). Under those conditions, however, it would be necessary for ProMES to incorporate individual measures and individual feedback (Miedema & Thierry, 1995).

Schmidt & Kleinbeck (op. cit.) during an intervention with ProMES confirm the significance of this kind of compatibility between the task interdependence within a team and the type of performance measures and feedback made available to team members. Used as a team-based performance measurement and feedback approach, ProMES can be expected to stimulate the development of cooperative work strategies rather than strategies directed to maximize individual performance (Saavedra *et al.*, op. cit.). Therefore, work settings characterized by a high degree of task interdependence would match far better with ProMES than work settings with only low demands for coordination and cooperation among team members (Schmidt & Kleinbeck, op. cit.).

The former settings also provide better conditions for using the team-based measures from ProMES as a basis for goal-setting interventions in teams (Pritchard *et al.*, 1988). Under conditions of low task interdependence in teams, however, an individual feedback and individual goals would be more adequate, because both stimulate group members to develop work strategies compatible with the requirements of such task conditions (Schmidt & Kleinbeck, op. cit.).

2.3.6 ProMES interventions

ProMES can be applied for different purposes, such as strategic planning (Clark, 1999), measuring corporate social performance (Swift & Pritchard, 2002), performance appraisal, and training evaluation. In general, ProMES has proven to be a very successful intervention (David, 2003).

A study compiling data from 55 ProMES projects found an average *d*-score of 1.42 (Pritchard *et al.*, 2002) when comparing average productivity increases from baseline to feedback, which surpasses the standards described by Cohen (1977) for a large effect size. However, there is considerable variability in the effects of ProMES in different projects. Of the 55 projects mentioned above, the *d*-score varies from -2.5 to +5.3.

Another meta-analysis results indicated that the average effect size of ProMES on productivity, calculated in terms of a Cohen's *d*-statistic, is 1.16 (Pritchard, Harrell, DiazGranados & Guzman, 2007). Practically, this effect size indicates that productivity during the ProMES intervention is an average of 1.16 standard deviations higher than productivity during baseline (Weaver, 2008). At the same time, the conditions and characteristics encountered in each one of these projects were very different. In order to examine the causes of this variability, an analysis of the optimal characteristics of productivity measurement interventions must be undertaken (David, 2003).

A very interesting finding is the effects of removing ProMES. Janssen *et al.* (1995) did a project where the unit's computer system was not operational for a period of four months and it was not possible to get the data for the ProMES feedback reports. When the computer was again functioning, it was possible to go back and reconstruct the data. They found that without ProMES feedback, productivity had decreased dramatically. When feedback was reinstated, productivity improved very quickly again to the previous level.

2.3.7 Summary

Referring back to the different perspectives from which productivity can be studied (see "Productivity, performance and productivity measurement" section 2.1), ProMES is embedded within a behavioural approach to productivity. It provides a measure of partial-factor productivity (Guzzo, 1998) in that it focuses on things personnel can do to improve productivity and not on the impact of the technology. However, it does include all aspects of the work being done and its impact on other measures of firm performance can in principle be assessed (Ramstad *et al.*, 2002).

“ProMES operationalizes key features of the motivation theory. Indicators are the operationalization of results. ProMES contingencies operationalize the Results-to-Evaluations connections. The Actions-to-Results connections can be thought of as defining work strategies in that they identify how effort should be allocated across actions. Feedback reports and feedback meetings focus on developing better work strategies (i.e., a more optimal set of Action-to-Results connections). The feedback over time allows unit personnel to evaluate how well the new strategies are working and to refine them as needed.” (Pritchard *et al.*, 2007:30)

In the first two phases of developing a ProMES system, the development group has to answer questions such as “What are we responsible for?” and “How can we measure how well we succeed in realizing our responsibilities?” They must concentrate on the question of what kind of contributions it can make to organisational goal attainment, and by which indicators these contributions can be measured in a valid way (Algera *et al.*, 1997a).

During this phase is important to consider objectives and indicators controllability. That is, to what degree is variation of the indicator scores attributable to the behaviour of the group *versus* external influences not under the control of the group? If the measures used in the system are not under the control of employees, frustration with the system occurs and acceptance is lowered. In an ideal system measures are designed so that their variance is directly due to efforts of the employee and not factors over which the employee cannot control (Pritchard *et al.*, 2010).

In ProMES, only indicators that are controllable by the team/unit are part of the performance management system. In particular, the establishment of the contingencies, the relation between controllable performance indicators for team/unit, and organisational goals is clarified (Algera *et al.*, 1997b).

How it was possible to observe, in the development of ProMES, indicators are designed that focus on those performance outcomes that can be influenced by the team/unit. This mean, the performance indicators should reflect team/unit efforts.

The issue of controllability of performance indicators also means that a team/unit needs to have discretion in its task performance (Algera *et al.*, 1997b). One important situation is that not only before, but also during and after development of a ProMES system, facilitators should spend time and energy in analysing the team’s tasks, in order to find what type of information (outcome or process feedback) is needed to stimulate productivity enhancement (Schmidt & Kleinbeck, 1997). Much will depend on whether the tasks are of a routine nature or not. The issue is how to ensure controllability.

From a motivational point of view this is very obvious. Stated negatively, teams/units often say “the board cannot censure us for performance outcomes we are not able to influence”. The implication is that the organisational structure where in ProMES is developed is very important. Implementation of ProMES can only be effective in organisational structures that give discretion to teams/units. For example, the concept of self-managing teams fits very nicely with implementation in practice (Algera *et al.*, 1997b).

The bottom-up approach of ProMES is considered necessary not only for the quality but also for the acceptance of the system. It fosters a sense of ownership in the team/unit. In the literature on goal-setting and feedback (Weldon & Weingart, 1993) goal acceptance or goal commitment is a crucial condition for the motivation process (Algera *et al.*, 1997b).

Provided that this measurement question has been answered in a satisfying way, then the issue of the non-linear weighing of the indicators by the ProMES contingencies becomes central. The issue is whether the contingencies are valid. That is, do they accurately reflect differences in the contribution to organisational effectiveness being made by different levels of the indicators?

Contingencies are developed by breaking the contingencies down into their components and making decisions on each. The first step is to identify the maximum value of each indicator. The design group must ask, “What is the maximum feasible value that the unit could do on each of the indicators under ideal conditions?” The next step is to get the minimum values each indicator could take on. This is the lowest realistic value the team/unit could show on each indicator. Getting accurate values as the maximums and minimums is a very important part of the system, so this discussion must not be rushed. The design group shall discuss the question and come to consensus on the maximum and minimums for each indicator. Thus, if there were five indicators, there would be five maximums and minimums.

After the values for the maximums and minimums have been agreed to, the next step is to determine the zero point for each indicator. The zero point is defined as the minimum acceptable level of performance on the indicator. It is the level that is neither good nor bad, neither positive nor negative.

Establishing effectiveness values of the maximum and minimum is the next move, the design group must determine them. To do this, the facilitators ask the design group to first rank order the maximums in terms of the contribution of each to the overall effectiveness of the unit. In other words, they should rank the indicator maximums in terms of overall importance to the unit's work. A good way for the facilitators to get at this is to ask, "If each of the

indicators were at their zero points and only one of the indicators could be at the maximum, which indicator would create the most value for the organisation?" The group discusses this until consensus is reached.

According to Algera *et al.* (1997a) the dynamics of organisational life require a constant attention to the possible need to update both the indicators and the contingencies.

A very interesting point is that the organisation can be seen to strive after several hierarchically organized objectives, and that various groups and teams contribute to the realization of the same objectives, although to different degrees and of course by doing different things. This mean, there is no one-to-one mapping of groups or teams/units on the one hand and organisational objectives (or sub-objectives) on the other hand. Instead, complex and intricate relationships exist between a hierarchy of groups and teams/units, and a hierarchy of organisational objectives and sub-objectives (Algera *et al.*, 1997a).

Contingencies represent the contribution of individual group performance indicators to organisational effectiveness and, by definition, have to take into account the hierarchy of objectives already described.

Once the contingencies are finished, the feedback system can be implemented. In order to be effective, a measurement and feedback system should provide the type of information needed by the team/unit or the individual.

When the sequence of acts that lead to the desired result is known, and people can execute these acts, just providing them with feedback on the desired result is probably sufficient to motivate the acts. However, in the case of missing links (means-end relationships), it might be insufficient or even frustrating to provide only results feedback. Information on how to accomplish the results is lacking and, apart from trial and error, nothing can be done to improve them. If a trial and error strategy is expensive, and/or if people will be blamed in the case of failure, they are put in an uncomfortable situation (Algera *et al.*, 1997b).

All the issues concerning, objectives, task and outcome interdependency, indicators, contingencies and feedback report show how important it is to view ProMES as an element in a complex network of interrelated organisational factors which should be taken into account in order for ProMES to develop all its potential for improving performance and productivity (Schmidt & Kleinbeck, *op. cit.*).

Chapter 3 Research Methodology

The Research Methodology chapter identifies and defines the choice of research methodology and explain the reasoning behind the use of the chosen research methodology.

3.1 Defining Research and Research Methodology

Research can be simply defined as a detailed study of a subject, especially in order to discover (new) information or reach a (new) understanding (Cambridge, 2003) or be identified as an enquiry or search for knowledge, or a systematic investigation to establish facts (Pellissier, 2007a). According to Kerlinger & Rinehart (1986:12) “[...] scientific research is systematic, controlled, empirical and critical investigation of natural phenomena guided by theory and hypotheses about the presumed relations among such phenomena.” In 1999 the OCDE (Manual Frascati:24) defined research and experimental development (R&D) as “[...] comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge of man, culture and society and the use of this stock of knowledge to devise new applications. R&D is a term covering three activities: basic research, applied research and experimental development.” Furthermore, research can be seen as “[...] an active, diligent and systematic process of enquiry in order to discover, interpret or revise facts, events, behaviours, theories or applications, with the help of such facts, laws or theories” (Pellissier, 2007a:6).

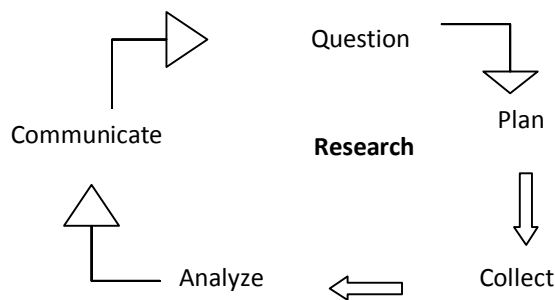


Figure 6 - Learning through Discovery. Adapted from Iowa State University (2009)

Important in this definitions are the words “[...] a systematic basis in order to increase the stock of knowledge” or “[...] diligent and systematic process of enquiry in order to discover.” A research must be systematic and designed to contribute to generalizable or transferable knowledge in order to be considered research that must meet the requirements of the human

subject regulations. In general, activities that contribute to generalizable knowledge are those that (Iowa State University, 2009):

- i. Attempt to make comparisons or draw conclusions from the gathered data;
- ii. Attempt to reach for generalizable principles of historical or social development;
- iii. Seek underlying principles or laws of nature that have predictive value and can be applied to other circumstances for the purpose of controlling outcomes;
- iv. Create general explanations about all that has happened in the past; or
- v. Predict the future.

Research identifies the need to find the answers to a number of questions, which suggests a number of purposes for the research (Saunders, 2003). Saunders (op. cit.) classified research as a:

- i. Applied research scientific investigations conducted to answer specific clinical questions or solve practice-related problems;
- ii. Basic research scientific investigation that involves the generation of new knowledge or development of new theories; its results often cannot be applied directly to specific clinical situations;
- iii. Correlation research the systematic investigation of relationships among two or more variables, without necessarily determining cause and effect;
- iv. Descriptive research, research that provides an accurate portrayal of characteristics of a particular individual, situation, or group. These studies are a means of discovering new meaning, describing what exists, determining the frequency with which something occurs, and categorizing information;
- v. Ethnographic research the investigation of a culture through an in-depth study of the members of the culture; it involves the systematic collection, description, and analysis of data for development of theories of cultural behavior;
- vi. Experimental research objective, systematic, controlled investigation for the purpose of predicting and controlling phenomena and examining probability and causality among selected variables;
- vii. Exploratory research studies that are merely formative, for the purpose of gaining new insights, discovering new ideas, and increasing knowledge of phenomena;

- viii. Grounded theory research, a research approach designed to discover what problems exist in a given social environment and how the persons involved handle them; it involves formulation, testing, and reformulation of propositions until a theory is developed;
- ix. Historical research, research involving analysis of events that occurred in the remote or recent past;
- x. Phenomenological research an inductive, descriptive research approach developed from phenomenological philosophy; its aim is to describe an experience as it is actually lived by the person.
- xi. Qualitative research, research dealing with phenomena that are difficult or impossible to quantify mathematically, such as beliefs, meanings, attributes, and symbols; it may involve content analysis; and
- xii. Quantitative research, research involving formal, objective information about the world, with mathematical quantification; it can be used to describe test relationships and to examine cause and effect relationships.

The research process includes several steps (Zikmund, 1991) as: identifying the research topic and problem, literature review, research design (determining how to conduct the research or the method) and research strategy (collecting research data before analysing and interpreting this data and finally presenting the results).

Within these steps operates the researcher and the quantitative and qualitative research approaches. Research design is determining how to conduct the research and the methods used. Research design has been referred to as “[...] detailed plan which you will use to guide and focus your research” (Hussey & Hussey, 1997:114). A certain rationale emerges in research design that suggests a particular data collection method or methods, a particular unit of analysis and sample selection (Hussey & Hussey, op. cit.). The research strategy, a subset of research design, includes elements of data collection and interpretation and emerges from both the research topic and problem (Hussey & Hussey, op. cit.) and the chosen research strategy differentiated the scientific research. According to Pellissier (2007a) research strategies can be differentiated depending on the specific outcome required:

- i. Basic Research - is defined as theoretical/experimental research conducted to develop hypothesis/theories to acquire new knowledge on phenomena/observable

facts without directly giving consideration to specific application/uses (Manual Frascati, op. cit.);

- ii. Applied Research - refers to research which aims to ascertain the possibility of practical application by establishing specific goals or that which explores new applications of method which are already in practical application using knowledge discovered through basic research (Manual Frascati, op. cit.); and
- iii. Experimental Development - is the utilisation of knowledge acquired from basic/applied research and actual experience and research designed for introduction of new materials, equipment, system or processes and their improvement (Manual Frascati, op. cit.).

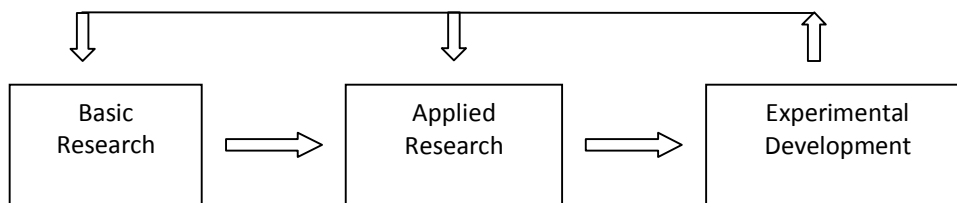


Figure 7 - Interrelationships between Basic Research, Applied Research and Experimental Development. Adapted from Manual Frascati (1999).

Research strategies can use a purely quantitative approach, a purely qualitative approach or both (mixed method) (Tashakkori & Teddlie, 2003; Pellissier, 2007a):

- i. Quantitative research is a formal, objective, systematic process in which numerical data are used to obtain information about the world. This research method is used: to describe variables; to examine relationships among variables; to determine cause-and-effect interactions between variables (Burns & Grove 2005). Quantitative research places the emphasis on measurement when collecting, analysing data and it is defined, not just by its use of numerical measures but also that it generally follows a natural science model of the research process measurement to establish objective knowledge (that is, knowledge that exists independently of the views and values of the people involved) (Spratt, Walker & Robinson, 2004). Quantitative methods are a good fit for deductive approaches, in which a theory or hypothesis justifies the variables, the purpose statement, and the direction of the narrowly defined research questions. The hypothesis being tested and the phrasing of the research questions govern how data will be collected (i.e., a locally developed

survey) as well as the method of statistical analysis used to examine the data (Creswell, 2002). Data collected, often through surveys administered to a sample or subset of the entire population, allow the researcher to generalize or make inferences. Results are interpreted to determine the probability that the conclusions found among the sample can be replicated within the larger population (Thorne & Giesen, 2002). Conclusions are derived from data collected and measures of statistical analysis (Creswell, *op. cit.*; Thorne & Giesen, *op. cit.*); and

- ii. Qualitative research is characterized by the collection and analysis of textual data like surveys, interviews, focus groups, conversational analysis, observation, ethnographies (Olds, Moskal & Miller, 2005), and by its emphasis on the context within which the research occurs. Some researchers argue that qualitative research is also concerned with issues of measurement, but with measures that are of a different order to numerical measures (Spratt *et al*, *op. cit.*). The research questions that can be answered by qualitative studies are questions such as: What is occurring? Why does something occur? How does one phenomenon affect another? While numbers can be used to summarise qualitative data, answering these questions generally requires rich, contextual descriptions of the data (Borrego, Douglas & Amelink, 2009). Primarily qualitative research seeks to understand and interpret the meaning of situations or events from the perspectives of the people involved and as understood by them. It is generally inductive rather than deductive in its approach, that is, it generates theory from interpretation of the evidence, albeit against a theoretical background (Spratt *et al*, *op. cit.*).

Table 10 - Characteristics of Quantitative and Qualitative Research

Point of Comparisons	Quantitative Research	Qualitative Research
Focus of research	Quantity (how much, how many)	Quality (nature, essence)
Philosophical roots	Positivism, logical empiricism	Phenomenology, symbolic interaction
Associated phrases	Experimental, empirical, statistical	Fieldwork, ethnographic, naturalistic, grounded, subjective
Goal of investigation	Prediction, control, description, confirmation, hypothesis testing	Understanding, description, discovery, hypothesis generating
Design characteristics	Predetermined, structured	Flexible, evolving, emergent
Setting	Unfamiliar, artificial	Natural, familiar
Sample	Large, random, representative	Small, non-random, theoretical
Data collection	Inanimate instruments (scales, tests, surveys, questionnaires, computers)	Researcher as primary instrument, interviews, observations
Mode of analysis	Deductive (by statistical methods)	Inductive (by researcher)
Findings	Precise, narrow, reductionist	Comprehensive, holistic, expansive

Adapted from Merriam (1998)

Table 11 - Methods of data collection in quantitative research

Quantitative	Qualitative
Surveys (questionnaires)	Questionnaires given in meetings
Structured interviewing	Interviews (face-to-face, or through various technologies) <ul style="list-style-type: none"> • Unstructured (everyday conversation, life history narrative of key informants; projective techniques) • Semi-structured (using an interview guide) • Individual (an in-depth interview) • Group (focus group) Structured (using an interview schedule)
Structured observation	Observation <ul style="list-style-type: none"> • Unstructured • Structured • Participant
Secondary analysis and official statistics	Documentary analysis Recordings - audio and video with structured or unstructured analysis, content analysis of talk and interaction
Content analysis according to a coding system	
Quasi-experiments (studies that have some of	

the characteristics of experimental design)	
Classic experiments (studies that have control groups and experimental groups)	
	Life history narrative focused on selected topics
	Critical incidents
	Concept mapping
	Case study
	Action research

Adapted from Spratt, Walker & Robinson (2004)

There are so many different qualitative research methods that it is sometimes difficult, to see what they have in common. However, Tesch (1991) identifies three common features among them:

1. They are language-oriented and emphasise communication and meaning;
2. They are descriptive/interpretive in character, providing descriptions and interpretations of social phenomena; and
3. They include theory-building approaches which try to identify connections between social phenomena.

There are several opinions about how to distinguish between quantitative and qualitative methods (as summarised in table 12), however a pragmatic view holds that the choice of any particular combination of procedures or methods depends upon factors like the objectives of the research, the kind of research question, the characteristics of the data, the preferences and skills of the researchers and the time and resources available to them (Spratt *et al*, op. cit.).

Table 12- Basic differences between quantitative and qualitative research concepts

	Quantitative Research	Qualitative Research
Role of theory	Deductive approach, testing of theory.	Inductive approach, generation of theory.
Theory of knowledge (epistemology)	Follows a natural science model, particularly positivism.	Interpretative.
View of social reality	Social reality as something objective and measurable.	Social reality as something constructed by people.

Adapted from Spratt, Walker & Robinson (2004)

Table 13 - Quantitative and qualitative research criteria

Quantitative Research Criteria	Qualitative Research Criteria
Validity: project and instruments measure what is intended to be measured	Credibility: establishing that the results are credible or believable
Generalizability: results are applicable to other settings, achieved through representative sampling	Transferability: applicability of research findings to other settings, achieved through thick description
Reliability: findings are replicable or repeatable	Dependability: researchers account for the ever-changing context within which the research occurs
Objectivity: researcher limits bias and interaction with participants	Reflexivity: researchers examine their own biases and make them known

Adapted from Borrego, Douglas & Amelink (2009)

- iii. Mixed method studies attempt to bring together methods from different paradigms and it has been described as the third methodological movement (following quantitatively and qualitatively oriented approaches) (Teddlie & Tashakkori, op. cit.). A mixed methods study involves the collection or analysis of both quantitative and/or qualitative data in a single study in which the data are collected concurrently or sequentially, are given a priority, and involve the integration of the data at one or more stages in the process of research (Creswell *et al.*, 2003). In a mixed method study the researcher might conduct a series of semi-structured interviews with a small number of athletes and also carry out a large-scale survey.

The research approach undertaken is mainly qualitative because the empirical procedures describes and interprets the experiences of research participants in a context-specific setting (Denzin & Lincoln, 2000), incorporate participants' own words to describe a experience, or phenomenon (Taylor & Bogdan, 1998), the researcher's self is an integral part of the analysis (Denscombe, 1998).

3.2 Social Research

The principal approach or paradigm in management and organisational studies has been positivism and its successors (explanation, hypothetico-deductive, multi-method eclecticism), these approaches are defined primarily by their view that an external reality exists and that an independent value-free researcher can examine this reality (Coghlan & Brannick, 2004). Positivism asserts that knowledge and truth are questions of correspondence in that they relate to an external referent reality (Smith, 1993). Positivists adopt a methodological approach towards reflexivity and concentrate on improving methods and their application (Johnson & Duberley, 2000). The scientific method involves systematic observation and description of phenomena contextualized within a model or theory, the presentation of hypotheses, the execution of tightly controlled experimental study, the use of inferential statistics to test hypotheses, and, finally, the interpretation of the statistical results in light of the original theory (Cacioppo, Semin & Berntson, 2004). Relying on the hypothetico–deductive method, positivism focuses on efforts to verify a priori hypotheses that are most often stated in quantitative propositions that can be converted into mathematical formulas expressing functional relationships (McGrath & Johnson, 2003). The aim of positivist approach is the creation of generalizable knowledge or covering laws. In positivist approach findings are validated by logic, measurement and the consistency achieved by the consistency of prediction and control (Coghlan & Brannick, op. cit.). In the process of investigation, researchers should express themselves in value-neutral, scientific language to move beyond ordinary and subjective descriptions, thereby resulting in universal and accurate statements and laws about the world. In doing so, knowledge attained about the independent reality can be accepted by reasonable people (Smith, 1983). In the positivistic tradition, proper applications of empirical methods (quantitative research) are essential to producing knowledge (Walker & Evers, 1999). According to Patel, Patel, Tan, & Elliot (2006) positivist research strives to explore, to explain, to evaluate, to predict and develop/test theories.

The interpretive researchers hold that reality is constructed in the mind of the individual, rather than it being an externally singular entity (Hansen, 2004). The interpretive position espouses a hermeneutical approach, which maintains that meaning is hidden and must be brought to the surface through deep reflection (Schwandt, 2000). This reflection can be stimulated by the interactive researcher–participant dialogue. Reflexivity is the social sciences concept used to explore and deal with the relationship between the researcher and the object of research (Coghlan & Brannick, op. cit.). Reflection means thinking about the conditions for what one is doing, investigating the way in which the theoretical, cultural and political context

of individual and intellectual involvement affects interaction with whatever is being researched, often in ways difficult to become conscious of (Alvesson & Skoldberg, 2000). A distinguishing characteristic of interpretivism is the centrality of the interaction between the investigator and the object of investigation, only through this interaction can deeper meaning be uncovered. The researcher and her or his participants jointly create (co-construct) findings from their interactive dialogue and interpretation (Ponterotto, op. cit.). Proponents of interpretivism emphasize the goal of understanding the lived experiences from the point of view of those who live it day to day (Schwandt, 2000), because they are more interested in understanding people (Patel *et al*, op. cit.). The interpretivist provides the primary foundation and anchor for qualitative research methods.

The research design employed in this research is a combination of positivist and interpretive research approaches. The hypothesis stated earlier was formulated to help explore the organisational productivity framework, toolkit, and theories developed in order to help nurture the athlete's motivation, cohesion and their understanding of the organisational productivity levels that exist in their organisation/team. Therefore, empowering athletes with knowledge of the ways productivity level affects the interactions within a team.

3.2.1 Action Research

Action research has been traditionally defined as an approach to research that is based on a collaborative problem-solving relationship between researcher and client, which aims at both solving a problem, contribute to change and generating new knowledge in a spirit of collaboration and co-inquiry (Shani & Pasmore, 1985; Ferrance, 2000).

“Action research focuses on knowledge in action. Accordingly, the knowledge created through action research is particular, situational and out of praxis. In action research the data are contextually embedded and interpreted. In action research, the basis for validation is the conscious and deliberate enactment of the action research cycle. The action researcher is immersed in the research setting.” (Coghlan & Brannick, op. cit.)

Shani & Pasmore (op. cit.) present a complete theory of the action research process in terms of five factors:

- i. Context: these factors set the context of the action research project;
- ii. Individual goals may differ and impact the direction of the project, while shared goals enhance collaboration. Organisational characteristics, such as resources, history, formal and informal organisations and the degrees of congruence between them affect the readiness and capability for participating in action research. Environmental

- factors in the global and local economies provide the larger context in which action research takes place;
- iii. Quality of relationships: the quality of relationship between members and researchers is paramount. Hence the relationships need to be managed through trust, concern for other, equality of influence, common language;
 - iv. Quality of the action research process itself: the quality of the action research process is grounded in the dual focus on both the inquiry process and the implementation process; and
 - v. Outcomes: the dual outcomes of action research are some level of improvement and the development of self-help and competencies out of the action and the creation of new knowledge from the inquiry.

A significant feature of all action research is that the purpose of research is not simply or even primarily to contribute to the fund of knowledge in a field, or even to develop emancipatory theory, but rather to forge a more direct link between intellectual knowledge/theory and action so that each inquiry contributes directly to the flourishing of human persons, and their communities (Reason & Torbert, 2001). Action research rejects the separation between thought and action that underlies the pure–applied distinction that has traditionally characterized management and social research. These approaches incorporate a collaborative enactment of action research cycles whereby the intended research outcome is the construction of actionable knowledge.

The central idea is that action research uses a scientific approach to study the resolution of important social or organisational issues together with those who experience these issues directly (Coghlan & Brannick, 2004). Action research works through a cyclical four step process of consciously and deliberately: planning/diagnosing; taking action; evaluating the action; leading to further planning/diagnosing, and so on (Coghlan & Brannick, op. cit.).

The organisational dynamics in action research comprises the following (Coghlan & Brannick, op. cit.): Pre-step: context and purpose.

The process of defining the desired future state is critical as it sets the boundaries for the purpose of the project and helps provide focus.

Main steps:

- i. Diagnosing - involves naming what the issues are as a working theme, on the basis of which action will be planned and taken;
- ii. Planning action - follows from the analysis of the context and purpose of the project, the framing of the issue and the diagnosis, and is consistent with them. It may be that this action planning focuses on a first step or a series of first steps;
- iii. Taking action - the plans are implemented and interventions are made; and
- iv. Evaluation action - the outcomes of the action, both intended and unintended, are examined.

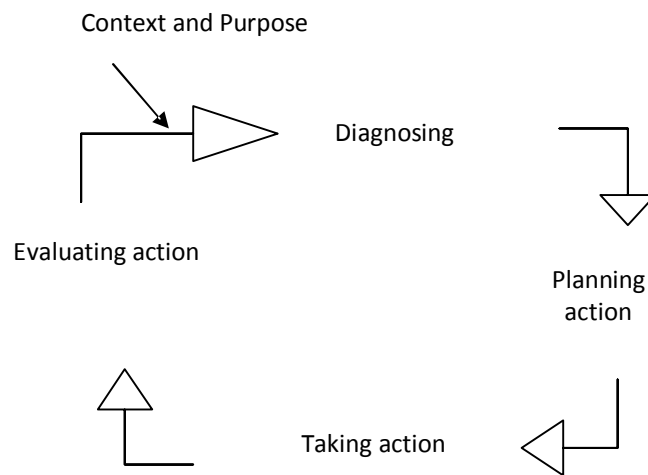


Figure 8 - The action research cycle. Adapted from Coghlan & Brannick (2004)

While the action research cycle expresses the core process of integrating action and theory it is important to keep it in perspective. For instance, Heron (1996) describes two approaches to the use of the cycle. He contrasts one approach, *Apollonian* whereby the cycles are enacted in a rational, linear, systematic manner with *Dionysian*, an approach where there is an imaginative, expressive, tacit approach to integrating reflection and action. Heron cautions against being rigid in adapting the action research cycle formally and so denying spontaneity and creativity. It is also important not to get too preoccupied in the cycles at the expense of the quality of participation.

3.2.1.1 Meta learning

In any action research project there are two action research cycles operating in parallel. One is the cycle we have just described of diagnosing, planning, taking action and evaluating in relation to the project. Zuber-Skerritt & Perry (2002) call this the “core” action research cycle.

The second is a reflection cycle which is an action research cycle about the action research cycle.

It is the dynamic of this reflection on reflection that incorporates the learning process of the action research cycle and enables action research to be more than everyday problem solving (Coghlan & Brannick, op. cit.). Hence it is learning about learning, in other word, meta learning. Mezirow (1991) identifies three forms of reflection: content, process and premise. All three forms of reflection are critical.

- i. Content reflection - is where you think about the issues, what is happening and so on;
- ii. Process reflection - is where you think about strategies, procedures and how things are being done; and
- iii. Premise reflection - is where you critique underlying assumptions and perspectives.

When content, process and premise reflections are applied to the action research cycle, they form the meta cycle of inquiry.

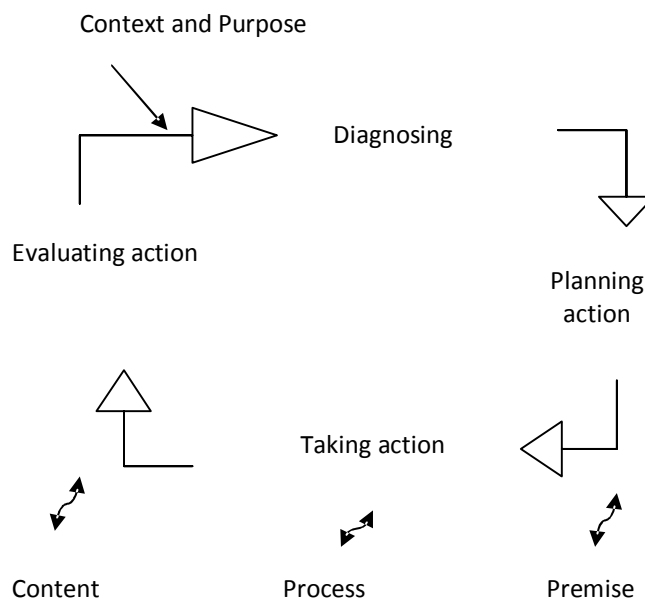


Figure 9 - Meta cycle of inquiry. Adapted from Coghlan & Brannick (2004)

- i. The content of what is diagnosed, planned, acted on and evaluated is studied and evaluated;

- ii. The process of how diagnosis is undertaken, how action planning flows from that diagnosis and is conducted, how actions follow and are an implementation of the stated plans and how evaluation is conducted are critical foci for inquiry; and
- iii. There is also premise reflection, which is inquiry into the unstated, and often non-conscious, underlying assumptions which govern attitudes and behaviour.

For instance, the culture of the organisation or subculture of the group working on the project has a powerful impact on how issues are viewed and discussed, without members being aware of them (Schein, 1999b).

If someone is writing a dissertation, the meta cycle is the dissertation's focus.

The action research project and dissertation are not identical. They are integrally interlinked, but they are not the same. The project on which the author is working may go ahead irrespective of whether or not the researcher is writing a dissertation. The researcher's dissertation is an inquiry into the project, hence the researcher needs to describe both cycles in a way that demonstrates the quality of rigour of your inquiry.

Mezirow's (2000) forms of reflection parallel the four territories of experience commonly used in action research (Torbert, 2001). These four territories operate at the individual, interpersonal and organisational levels:

- i. Intentions - purpose, goals, aims and vision;
- ii. Planning - plans, strategy, tactics, schemes;
- iii. Action - implementation, performance; and
- iv. Outcomes - results, outcomes, consequences and effects.

Action research aims to develop awareness, understanding and skills across all these territories. Attending to the action research cycle and to the meta cycle may involve more than simply attending to behaviour. Researcher may draw from techniques in the qualitative research approaches through how you formulate the issue, collect and analyse data and report results (Sagor, 1992). For Gummesson (2000:34) action research is "[...] the most demanding and far reaching method of doing case study research".

3.2.1.2 Questionnaires

Questionnaires as a method of data collection have both advantages and disadvantages. These advantages and disadvantages are factors that have a significant impact on a researcher's decision about whether or not to use questionnaires in the study (Patel *et al.*, op. cit.). Questionnaire construction is a very demanding task, which requires not only methodological competence but also extensive experience with research in general and questioning techniques in particular (Leedy & Ormrod, 2005). This expertise provides the researchers with the necessary skills required to cope with the major issues of this process, which relate to how the format of the questionnaire should be moulded, what types of questions should be considered and what they should contain, how long the questionnaire should be, and in general how the questionnaire should be presented so that it is clear, easy to read and attractive to the respondent and, most importantly, so that it achieves its purpose (Patel *et al.*, op. cit.).

“Questionnaires come in many different forms from: factual to opinion based, from tick boxes to free text responses. Whatever their form, questionnaires are often viewed as quick and easy to do. This is not always the case. To get useful responses, in a cost-effective way, it is important to be clear about the aim of the questionnaire and how the responses will help you improve the learning technology or its implementation. Think also about the analysis of results. It can be sobering to consider the amount of data you will generate and the time it will take to analyse.” (Milne, 2010:21)

The process of questionnaire construction is time-consuming and requires extensive experience to produce a questionnaire that is justifiable as a research tool (Patel *et al.*, op. cit.). Therefore, this research proposes a toolkit made up of a combination of existing questionnaires that have been tested and widely accepted in organisational theory research in order to explore and test the proposed hypothesis.

3.2.2 Case Study

According to Leedy & Ormrod (2005) a case study is a type of qualitative researches method in which in-depth data are gathered relative to an individual, group or organisation for the purpose of learning more about an unknown or poorly understood situation. There are four main aspects needed for case study design:

- i. A “conceptual framework”;
- ii. A set of “research questions”;
- iii. A “sample strategy”; and

- iv. A decision on “methods and instruments for data collection”.

Yin (1994) notes that case studies are observations of real life events that are not controlled. A case study’s goal is to understand current and complex social phenomena.

Yin (op. cit) presented at least four applications for a case study model:

- i. To explain complex causal links in real-life interventions;
- ii. To describe the real-life context in which the intervention has occurred;
- iii. To describe the intervention itself; and
- iv. To explore those situations in which the intervention being evaluated has no clear set of outcomes.

Yin (1993) has identified some specific types of case studies: exploratory, explanatory, and descriptive.

- i. In exploratory case - studies, fieldwork, and data collection may be undertaken prior to definition of the research questions and hypotheses. This type of study has been considered as a prelude to some social research. However, the framework of the study must be created ahead of time;
- ii. Explanatory cases - are suitable for doing causal studies. In very complex and multivariate cases, the analysis can make use of pattern-matching techniques. Yin & Moore (1988) conducted a study to examine the reason why some research findings get into practical use. They used a funded research project as the unit of analysis, where the topic was constant but the project varied;
- iii. Descriptive cases - require that the investigator begin with a descriptive theory, or face the possibility that problems will occur during the project. Descriptive theory must cover the depth and scope of the case under study. The selection of cases and the unit of analysis are developed in the same manner as the other types of case studies.

Stake (1995) included three others:

- iv. Intrinsic - when the researcher has an interest in the case;
- v. Instrumental - when the case is used to understand more than what is obvious to the observer; and

- vi. Collective - when a group of cases is studied.

Exploratory cases are sometimes considered as a prelude to social research. Explanatory case studies may be used for doing causal investigations. Descriptive cases require a descriptive theory to be developed before starting the project. Pyecha (1988) used this methodology in a special education study, using a pattern-matching procedure. In all of the above types of case studies, there can be single-case or multiple-case applications.

Case study is known as a triangulated research strategy. Snow & Anderson (1987) asserted that triangulation can occur with data, investigators, theories, and even methodologies. Stake (op. cit.) stated that the protocols that are used to ensure accuracy and alternative explanations are called triangulation. The need for triangulation arises from the ethical need to confirm the validity of the processes. In case studies, this could be done by using multiple sources of data (Yin, op. cit.). The problem in case studies is to establish meaning rather than location (Tellis, op. cit.).

Denzin (1984) identified four types of triangulation:

- i. Data source triangulation - when the researcher looks for the data to remain the same in different contexts;
- ii. Investigator triangulation - when several investigators examine the same phenomenon;
- iii. Theory triangulation - when investigators with different viewpoints interpret the same results; and
- iv. Methodological triangulation - when one approach is followed by another, to increase confidence in the interpretation.

Case studies ask “how” and “why” questions. They employ a mix of quantitative and qualitative evidence, use multiple sources of evidence, as well as apply triangulation to compare and corroborate the evidence (Yin, 1999). In case study research, the notion of combining qualitative and quantitative data offers the promise of getting closer to the “whole” of a case in a way that a single method of study could not achieve (Brewerton & Millward, 2001). These aspects of the qualitative and quantitative combination approach of case study design are explored in relation to the design of the case study investigation (Tellis, op. cit.).

Good case studies should contain some operational framework, even if the case studies fall into the classic "exploratory" mode. Even when exploring, some framework should be in place to define the priorities to be explored (Yin, op. cit.). For most case studies, a common operational framework increasingly takes the form of a "logic model" (Wholey, 1979) or a specification of hypothesized cause-effect-cause-effect-cause-effect patterns over time. Having such an operational framework ahead of time helps to define what is to be studied as well as the topics or questions that might have to be covered (Yin, op. cit.).

Single cases may be used to confirm or challenge a theory, or to represent a unique or extreme case (Yin, op. cit.). According to Tellis (op. cit.:3) "[...] single-case studies are also ideal for revelatory cases where an observer may have access to a phenomenon that was previously inaccessible. These studies can be holistic or embedded the latter occurring when the same case study involves more than one unit of analysis. Each individual case study consists of a "whole" study, in which facts are gathered from various sources and conclusions drawn on those facts."

A final desirable characteristic of case studies is to present the case study evidence separate from the investigator's interpretations of the evidence. This separation is common in laboratory and quantitative studies, in which results and data tables are presented before interpretation takes place (Yin, op.cit).

3.2.2.1 Design the Case Study Protocol

The first stage in the case study methodology recommended by Yin (1994) is the development of the case study protocol. This stage is composed of two subheadings:

- i. Determine the Required Skills and Develop; and
- ii. Review the Protocol.

3.2.2.1.1 Determine the Required Skills

Yin (op. cit.) suggested that the researcher must possess or acquire the following skills:

- i. The ability to ask good questions and to interpret the responses;
- ii. Be a good listener;
- iii. Be adaptive and flexible so as to react to various situations;
- iv. Have a firm grasp of issues being studied; and
- v. Be unbiased by preconceived notions.

Application of Recommended Procedures

The development of the rules and procedures contained in the protocol enhance the reliability of case study research (Yin, op. cit.).

A draft of the protocol will be developed by the researcher. This follows extensive relevant readings on the topic which would help in developing the draft questions (Tellis, op. cit.).

The protocol should include the following sections (Yin, op. cit.):

- i. An overview of the case study project - this will include project objectives, case study issues, and presentations about the topic under study;
- ii. Field procedures - reminders about procedures, credentials for access to data sources, location of those sources;
- iii. Case study questions - the questions that the investigator must keep in mind during data collection; and
- iv. A guide for the case study report - the outline and format for the report.

According to Tellis (op. cit.:4) “[...] the discipline imposed on the investigator by the protocol is important to the overall progress and reliability of the study. It helps keep the investigator's focus on the main tasks and goals, while the process of development brings out problems that would only be faced during the actual investigation. The overview of the project is a useful way to communicate with the investigator, while the field procedures are indispensable during data collection. The case study questions are those under study, not those contained in the survey instrument. Each question should also have a list of probable sources.”

The guide for the case study report is often omitted from case study plans, since investigators view the reporting phase as being far in the future. Yin (op. cit.) proposed that the report be planned at the start. Case studies do not have a widely accepted reporting format - hence the experience of the investigator is a key factor. Some researchers have used a journal format which was suitable for their work, but not necessarily for other studies (Feagin, Orum & Sjoberg, 1991). The reason for the absence of a fixed reporting format is that each case study is unique. The data collection, research questions and indeed the unit of analysis cannot be placed into a fixed mould as in experimental research (Tellis, op. cit.).

Yin (1984) further presented three conditions for the design of case studies:

- i. The type of research question posed;

- ii. The extent of control an investigator has over actual behavioural events; and
- iii. The degree of focus on contemporary events.

In this research work, there are "how" questions. This type of research question justifies an explanatory study. The researcher had no control over the behavioural events, which is a characteristic of case studies. The third condition, is evident in the current research, is that the events being examined are contemporary.

An empirical investigation of a contemporary phenomenon within its real-life context is one situation in which case study methodology is applicable. Yin (op. cit.) cautioned that case study designs are not variants of other research designs. Yin (op. cit.) proposed five components of case studies:

- i. A study's questions;
- ii. Its propositions, if any;
- iii. Its unit(s) of analysis;
- iv. The logic linking the data to the propositions; and
- v. The criteria for interpreting the findings (Yin, 1994,).

The research questions framed as "how" determine the relevant strategy to be used. In the current research, the nature of the questions leads to an explanatory- intrinsic case study. The unit of analysis in a case study could be "[...] an individual, a community, an organisation, a nation-state, an empire, or a civilization" (Sjoberg, Williams, Vaughan & Sjoberg, 1991:14). This research uses the case study organisation as the unit of analysis.

3.2.2.1.2 Review the Protocol

The second stage of the methodology recommended by Yin (op. cit.) and which were used in the current research is the conduct of the case study. There are three tasks in this stage that must be carried out for a successful project:

- i. Preparation for data collection;
- ii. Distribution of the questionnaire; and
- iii. Conducting interviews.

Once the protocol has been developed and tested, it puts the project into the second phase - the execution of the plan (Tellis, op. cit.). In this phase the primary activity is that of data collection. The protocol described above addresses the types of evidence that are available in the case organisation. In case studies, data collection should be treated as a design issue that will enhance the construct and internal validity of the study, as well as the external validity and reliability (Yin, op. cit.). Most of the field methods described in the literature treats data collection in isolation from the other aspects of the research process, but that would not be productive in case study research (Yin, op. cit.).

Yin (op. cit.) further identified six primary sources of evidence for case study research. Not all sources are essential in every case study, but the importance of multiple sources of data to the reliability of the study is well established (Stake, op. cit.). The six sources identified by Yin (1994) are:

- i. Documentation;
- ii. Archival records;
- iii. Interviews;
- iv. Direct observation;
- v. Participant observation; and
- vi. Physical artefacts.

No single source has a complete advantage over the others; rather, they might be complementary and could be used in tandem (Tellis, op. cit.). Thus a case study should use as many sources as are relevant to the study. Table 14 indicates the strengths and weaknesses of each type:

Table 14 - Strengths and Weaknesses of sources of evidence

Source of Evidence	Strengths	Weaknesses
Documentation	<ul style="list-style-type: none"> • Stable - repeated review; • Unobtrusive - exist prior to case study; • Exact - names etc; • Broad coverage - extended time span. 	<ul style="list-style-type: none"> • Retrievability – difficult; • biased selectivity • Reporting bias - reflects author bias (unknown); • Access – may be blocked.
Archival Records	<ul style="list-style-type: none"> • Same as above; • Precise and quantitative. 	<ul style="list-style-type: none"> • Same as above; • Privacy might inhibit access.
Interviews	<ul style="list-style-type: none"> • Targeted - focuses on case study topic; • Insightful - provides perceived causal inferences. 	<ul style="list-style-type: none"> • Bias due to poor questions; • Response bias; • Incomplete recollection; • Reflexivity - interviewee expresses what interviewer wants to hear.
Direct Observation	<ul style="list-style-type: none"> • Reality - covers events in real time; • Contextual - covers event context. 	<ul style="list-style-type: none"> • Time-consuming; • Selectivity - might miss facts; • Reflexivity - observer's presence might cause change; • Cost - observers need time.
Participant Observation	<ul style="list-style-type: none"> • Same as above; • Insightful into interpersonal behaviour. 	<ul style="list-style-type: none"> • Same as above; • Bias due to investigator's actions.
Physical Artefacts	<ul style="list-style-type: none"> • Insightful into cultural features; • Insightful into technical operations. 	<ul style="list-style-type: none"> • Selectivity • Availability.

Adapted from Yin (1994)

In this research work will be use:

- i. Interviews - are one of the most important sources of case study information. The interview could take one of several forms: open-ended, focused, or structured. In an open-ended interview, the researcher could ask for the informant's opinion on events or facts. This could serve to corroborate previously gathered data. In a focused interview, the respondent is interviewed for only a short time, and the questions asked could have come from the case study protocol. The structured interview is particularly useful in studies of neighbourhoods where a formal survey is required;

- ii. Direct observation - in a case study occurs when the investigator makes a site visit to gather data. The observations could be formal or casual activities, but the reliability of the observation is the main concern; and
- iii. Participant observation - is a unique mode of observation in which the researcher may actually participate in the events being studied. This technique could be used in studies of neighbourhoods or organisations, and frequently in anthropological studies. The main concern is the potential bias of the researcher as an active participant. While the information may not be available in any other way, the drawbacks should be carefully considered by the researcher.

Yin (op. cit.) suggested three principles of data collection for case studies:

- i. Use multiple sources of data;
- ii. Create a case study database; and
- iii. Maintain a chain of evidence.

According to Tellis (op. cit.: 6) “[...] the rationale for using multiple sources of data is the triangulation of evidence. Triangulation increases the reliability of the data and the process of gathering it. In the context of data collection, triangulation serves to corroborate the data gathered from other sources. The two types of databases that might be required are the data and the report of the investigator. The design of the databases should be such that other researchers would be able to use the material based on the descriptions contained in the documentation.”

In recommending that a chain of evidence be maintained, Yin (op. cit.) was providing an avenue for the researcher to increase the reliability of the study. The procedure is to have an external observer follow the derivation of evidence from initial research questions to ultimate case study conclusions (Tellis, op. cit.). The case study report would have citations to the case study database where the actual evidence is to be found. This study use the methodology recommended by Yin (1984) and others will be adapt.

The toolkit has been developed from a combination of existing organisational analytical tool that are currently used separately to analyse productivity in an organisation, and how goal-setting theory interferes. The toolkit compriseded the following questionnaires and measurement system:

- i. Task and Ego-orientation in Sport Questionnaire (TEOSQ) developed by Duda & Nicholls (1989);
- ii. Jackson Psychological Collectivism Measure (JPCM) by Jackson *et al.* (2006);
- iii. The Goal-setting in Sport Questionnaire (GSISQ: Weinberg, 1997); and
- iv. Productivity Measurement and Enhancement System (ProMES).

The questionnaires will be distributed through the team coach in paper and after transfer to an internet survey application. It will be also collect match statically information to verify the team productivity according to ProMES.

3.2. 3 Analysis of the Case Study

The analysis of a case study is one of the least developed aspects of the case study methodology. The researcher needs to rely on experience and the literature to present the evidence in various ways, using various interpretations (Tellis, *op. cit.*). This case study employs a series of statistical values to assist the presentation of the data. However not all case studies lend themselves to statistical analyse, and in, fact the attempt to make the study conducive to such analysis could inhibit the development of other aspects of the study (Tellis, *op. cit.*). Miles & Huberman (1984) have suggested alternative analytical techniques in such situations, such as using arrays to display the data, creating displays, tabulating the frequency of events, ordering the information, and other methods. This must be done in a way that will not bias the results. "Data analysis consists of examining, categorizing, tabulating, or otherwise recombining the evidence to address the initial propositions of a study." (Yin, 1994:17)

Yin (1994) suggested that every investigation should have a general analytic strategy, so as to guide the decision regarding what will be analyzed and for what reason. He presented some possible analytic techniques: pattern-matching, explanation-building, and time-series analysis. In general, the analysis will rely on the theoretical propositions that led to the case study (Tellis, *op. cit.*). If theoretical propositions are not present, then the researcher could consider developing a descriptive framework around which the case study is organised.

Trochim (1989) considered pattern-matching as one of the most desirable strategies for analysis. This technique compares an empirically based pattern with a predicted one. If the patterns match, the internal reliability of the study is enhanced. The actual comparison between the predicted and actual pattern might not have any quantitative criteria. The discretion of the researcher is therefore required for interpretations.

Explanation-building is considered a form of pattern-matching, in which the analysis of the case study is carried out by building an explanation of the case (Tellis, op. cit.). Explanation-building is an iterative process that begins with a theoretical statement, refines it, revises the proposition, and repeating this process from the beginning. This is known to be a technique that is fraught with problems for the investigator. One of those problems is a loss of focus, although keeping this in mind protects the investigator from those problems.

Time-series analysis is a well-known technique in experimental and quasi-experimental analysis. It is possible that a single dependent or independent variable could make this simpler than pattern-matching, but sometimes there are multiple changes in a variable, making starting and ending point's unclear (Yin, op. cit.).

There are some things that the researcher must be careful to review to ensure that the analysis will be of high quality, including: showing that all relevant evidence was used, that all rival explanations were used, that the analysis addressed the most significant aspect of the case study, and that the researchers knowledge and experience are used to maximum advantage in the study (Tellis, op. cit.).

Yin (op. cit.) encouraged researchers to make every effort to produce an analysis of the highest quality. In order to accomplish this, he presented four principles that should attract the researcher's attention:

- i. Show that the analysis relied on all the relevant evidence;
- ii. Include all major rival interpretations in the analysis;
- iii. Address the most significant aspect of the case study;
- iv. Use the researcher's prior, expert knowledge to further the analysis.

3.3 Research Design

The research design employed in this research is a combination of positivist and interpretive research approaches. The research hypothesis stated earlier was formulated to help explore the organisational productivity framework, toolkit, and theories developed in order to help nurture the athlete's motivation, cohesion and their understanding of the organisational productivity levels that exist in their organisation/team. Therefore, empowering athletes with knowledge of the ways productivity level affects the interactions within a team.

The research approach is qualitative, and because the sampling size is relatively small (the entire squad as 17 athletes) the value is in depth of the findings and generalisation is not the point.

In the current research, the nature of the research hypothesis focuses on knowledge in action that suggests an action research project and at the same time leads to an explanatory- intrinsic case study.

- i. Explanatory, because case studies may be used for doing causal investigations; and
- ii. Intrinsic, because the researcher has an interest in the case.

This research uses the case study organisation as the unit of analysis. The researcher had no control over the behavioural events, which is a characteristic of case studies and the events being examined are contemporary.

The sources of evidence were:

- i. Interviews - are one of the most important sources of case study information. In this research, interviews were carried out in order to search for productivity measures/indicators and to follow team productivity.
- ii. Direct observation - because the investigator made a site visits to gather data.
- iii. Participant observation - because ProMES data.

The process of questionnaire construction is time-consuming and requires extensive experience to produce a questionnaire that is justifiable as a research tool. Therefore, this research proposed a toolkit made up of a combination of four existing questionnaires that have been tested and widely accepted in order to explore and test the proposed hypothesis. They were currently used separately:

- i. Task and Ego-orientation in Sport Questionnaire (TEOSQ) developed by Duda & Nicholls (1989, 1992)

The TEOSQ (see Appendix C) can be used to assess whether an individual defines success in a sporting context as mastery (task orientated) or outperforming others (ego orientated). It can be also used to assess the participants' dispositional goal perspective in the sports setting.

The TEOSQ is a thirteen item questionnaire with seven items measuring task-orientation and six items measuring ego-orientation. When completing the TEOSQ, participants are requested to think of when they felt most successful in their sports and then indicate their agreement with items reflecting task- and ego-oriented criteria.

Examples of task-orientation items included "I work really hard" and "I do my very best", whereas on the ego-orientation subscale there were items such as "The others can't do as well as me" and "I'm the best". The response scale has a Likert format ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The psychometric validity of the TEOSQ has been demonstrated by Duda (1989) and sports psychology research has supported the validity and reliability of the TEOSQ across different sports, competitive levels, and national origins (Duda & Whitehead, 1998).

Scoring → The TEOSQ (Duda & Nicholls, 1992) was comprised of two subscales, one measuring task-orientation and the other measuring ego-orientation. Participants indicated answers on a 5 point Likert - type scale where one was equal to strongly disagree and five was equal to strongly agree. A mean score was calculated for each participant by adding the scores for the task-orientation items together and dividing by seven and adding the ego-orientation items together and dividing by six. This resulted in a mean score between one and five where one represented a low score and five a high score for the perspective goal orientation. All missing data were coded as negative nine.

Validity - the TEOSQ has repeatedly been shown to have a stable two factor structure with six items loading on Task-orientation and seven items loading on Ego-orientation (Boyd, 1990; Duda & Chi, 1992; Duda & Nicholls, 1989b; White & Duda, in press). Additionally, the Task and Ego-orientation in Sport Questionnaire scales (Duda, 1992) have been found to internally consistent ($\alpha = .81-.86$ and $.79-.90$, respectively) and have acceptable test-retest reliability ($r = .68$ and $.75$, respectively). In the present research, the TEOSQ subscales exhibited adequate internal consistency (the Cronbach alpha coefficients for the Task and Ego-orientation subscales were $.551$ and $.639$, respectively).

ii. Jackson Psychological Collectivism Measure (JPCM) by Jackson *et al.* (2006)

The JPCM is a 15-item instrument (see Appendix D), its instructions ask respondents to think about the working groups they currently belong to and have belonged to in the

past and rate how much they agree or disagree with each item. Each of the five facets is measured by three items:

- The Preference facet is measured by the following items. (1) "I preferred to work in those groups rather than working alone." (2) "Working in those groups was better than working alone." (3) "I wanted to work with those groups as opposed to working alone."
- Among all five, the Preference facet has had the most attention by researchers. Preference here means one's preference for working in a team setting. According to Jackson *et al.* (2006), those high in Preference believe are people who like to be a part of a group and tend to define their identity by membership in those groups.
- The Goal Priority facet is measured with the following three items: (1) "I cared more about the goals of those groups than my own goals." (2) "I emphasized the goals of those groups' more than individual goals." (3) "Group goals were more important to me than my personal goals." Goal Priority means putting the needs of the group above personal goals. Salas *et al.* (2005) noted that engaging in this form of goal priority is a hallmark of a successful team. According to Salas *et al.*, the willingness to sacrifice when needed for the good of the team requires the teams to have certain foundations in place (i.e., trust). As measured in Jackson *et al.*'s JPCM, Goal Priority, and every other facet, is an attitude one brings with him or her to each new team setting that, when present in high levels, is correlated with successful team member performance.

Validity - "[...] the 15-item Jackson *et al.* (2006) JPCM has been shown to be psychometrically sound. When Jackson *et al.* developed their facets they not only based them on the Collectivism literature, but subsequently tested and supported their five factor model using Confirmatory Factor Analysis (CFA). Specifically, they found the fit was strong for their model: $\chi^2(85, N= 235) = 111.51, p < .05; \chi^2/df= 1.38; IFI = .98; RMSEA = .04$. In a second and third study published within the same article the researchers found similar CFA results for Study 2 ($\chi^2 (85, N = 139) = 101.91, p < .10$) and Study 3 $\chi^2 (85, N = 124) = 148.06, p < .001$). CFA was an appropriate analysis because the five facets and their definitions are based on the most widely used measures of Collectivism, which were developed by Triandis and colleagues (Triandis *et al.*, 1986; Triandis, Bontempo, Villareal, Asai, & Lucca, 1988; Triandis, McCusker, & Hui, 1990)." (Cotton, 2009).

Table 15 - Jackson Psychological Collectivism Measure

Key Facets of the Collectivism			
Preference	Collectivists emphasize relationships with in-group members and prefer to exist within the bounds of the in-group. They are affiliative by nature and believe that collective efforts are superior to individual ones.	Reflect a sense of attraction to the group, and this affinity toward the group promotes cooperation.	Individuals high on the Preference facet emphasize relationships with in-group members and prefer to exist within the bounds of a group (Jackson <i>et al.</i> , 2006). Because they believe that affiliated efforts are superior to individual efforts, individuals high on Preference should be inherently more interested in aligning themselves with other team members and be more motivated to align their roles with the team's purpose. In addition, if teams are composed of high-Preference individuals, movement toward a focus on the group should be easier and quicker for those teams.
Reliance	Collectivists believe that one person's responsibility is the responsibility of the entire in-group. This sense of collective responsibility makes them comfortable relying on other members of the in-group.	Support cooperation by fostering goal and task interdependence.	Individuals high on the Reliance facet believe that one person's responsibility is the responsibility of the entire group. Moreover, they have a collective sense of responsibility that leads them to feel comfortable relying on and trusting in the group (Jackson <i>et al.</i> , 2006). Although this willingness to rely on one another may be important for effective team performance once roles are defined and an understanding of the team has developed, a general willingness to rely on the team may have a negative effect on early team performance (i.e., during team formation). Teams composed of members low on Reliance may work harder to understand what each team member can contribute to the larger team assignments. Team members low on Reliance may see their individual performance as critical to the team's success (i.e., they are not sure whether or not they can rely on other team members) and may expend more effort than team members high on Reliance.
Concern	Collectivists are motivated not by self-interest but by a concern for the well-being of the in-group and its members.	Reflect a sense of attraction to the group, and this affinity toward the group promotes cooperation.	Individuals high on the Concern facet are motivated by a concern for the well-being of the entire group and its members (Jackson <i>et al.</i> , 2006). As such, individuals high on Concern should be interested in gaining knowledge about other team members and want to develop an understanding of their needs. This concern for others should help teams composed of high-Concern individuals shift from a self-view to a team view of performance.

Norm acceptance	Collectivists focus on the norms and rules of the in-group and comply with those norms and rules in order to foster harmony within the collective.	Benefits cooperation through the development of shared norms and prosocial behavior.	Team members high on Norm Acceptance focus on the norms and rules of the in-group and comply with these norms in order to foster harmony with the team (Jackson <i>et al.</i> , 2006). Individual attitudes and preferences are secondary to team norms for these team members (Ho & Chiu, 1994; Triandis, 1995). Team norms are an essential component of effective and efficient team functioning (Bettenhausen & Murnighan, 1991; Wageman, 1997) because, when accepted by team members, they promote consensus on the proper way to approach and accomplish the team's task (Chatman & Flynn, 2001).
Goal priority	Collectivists' actions are guided by the consideration of the in-group's interests. Thus in-group goals take priority over individual goals, even if this causes the in-group member to make certain sacrifices.	Support cooperation by fostering goal and task interdependence.	Team members high on Goal Priority are guided by a consideration for the in-group's interests. With these individuals, team goals take precedence over individual goals even when it causes them to make sacrifices (Jackson <i>et al.</i> , 2006). In this sense, team members high on Goal Priority confer primacy to goals of the team rather than their own personal goals (Triandis, 1995). Because goals increase effort toward the goal-related task (Locke & Latham, 2002), team members with high Goal Priority should have motivation, maintain effort, and persist toward team goals.

Adapted from Jackson *et al.* (2006) and Dierdorff *et al.* (2010)

iii. The Goal-setting in Sport Questionnaire (GSISQ) by Weinberg (1997)

The GSISQ (see appendix E) was utilized to better understand the athletes' goal-setting practices and strategies. The 57-item GSISQ provides insight into how often athletes set various goals and how effective the goals are for improving performance. Specifically, 52 of the questions are answered on a 9-point Likert scale (i.e., 1=not often at all, 9=very often). Of these 52 questions, 25 relate to goal frequency, 24 relate to goal effectiveness, and 3 relate to goal commitment and effort. The remaining 5 include 2 rank ordered and 3 open-ended questions that request the respondent to indicate their goal-setting preferences.

iv. ProMES by Pritchard (1990)

ProMES is a results-oriented measurement and feedback system specifically designed to improve performance over time while at the same time improving the quality of work life (Pritchard *et al.*, 2011). The ProMES intervention is done in a series of steps. The design team meets to identify the objectives of the team and corresponding quantitative measures (indicators) that assess how well the team is meeting the objectives. Once the objectives and indicators are approved, the design team develops what are known as contingencies. Contingencies is a function that defines how much of an indicator is how good for the organisation. The contingency relates indicator amounts to the effectiveness scores. Upon approval of the contingencies, the feedback system is finished and ready for implementation. Someone (in this case the researcher) collects data on the indicators and, along with the contingency information, feedback is provided to team staff after each match during regular feedback meetings. It is important realise that the main characteristic of a ProMES system is that it provides feedback and it can be used as a goal-setting system (Algera *et al.*, 2004).

3.3. 1 Framework

Field work was developed for an Angolan female handball team. The questionnaires were distributed through the team coach in hard copy and there, after transfered to an internet survey application. It was also collected match statically information to verify the team productivity according to ProMES.

The application of the ProMES method followed the Pritchard sequence (1990), which involves:

- i. Identification of targets;

- ii. Identification of indicators;
- iii. Definition of contingencies; and
- iv. Developing a feedback system.

The field work was comprised three phases:

- i. Initial observation;
- ii. The ProMES method; and
- iii. Analysis of results.

During the first two phases, questionnaires will be used to diagnose the group, especially in matters related to the research problem, particularly on the motivation and collectivism of athletes, what they think about how to increase productivity, and, more importantly, on the receptivity of working with the proposed method.

The research strategy is based on the following principles:

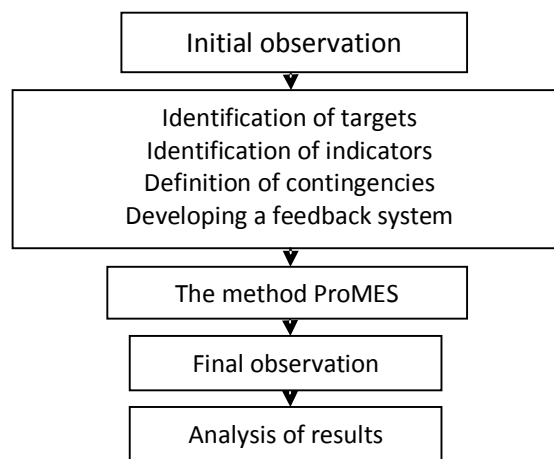


Figure 10- The research strategy

The aim was to confirm a model that measures and improves productivity in TS. One major element that influences TS dynamics was investigated in how it responds to the various problems considered in the objective. In order to meet the goals, the research model followed the following structure:

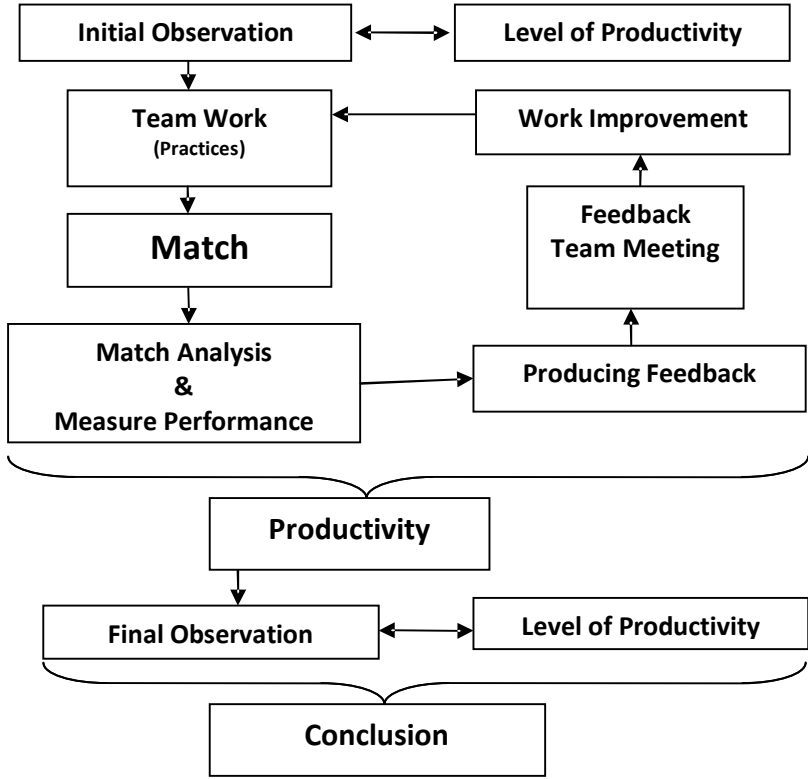


Figure 11 - The research framework.

3.4 Summary

This chapter was used to outline the research methodology which was followed to complete the empirical part of the investigation. The steps in the process were outlined, which included social research, followed by the research design and the framework of this research.

The following chapter will examine how the data is analysed, and then discuss the results of the study with regards to the variables, their correlation to each other, reliability of the research data and instruments.

Chapter 4 Analysis of the Research Results

The analysis of the research results chapter describes how the research was conducted, includes the results of the questionnaires, and provides an analysis of the findings gathered. It includes a discussion and interpretation of the research findings combining the research findings with that of the literature reviewed.

In chapter 1, the researcher stated that the aim of this research is to verify if the utilisation of goal-setting and the use of ProMES system as a work tool to measure productivity will influence and improve productivity in an Angolan organisation in this case study a female handball team.

In order to do this, it was found necessary to review the literature about goal-setting, productivity and its measures, and the implementation and application of ProMES. This was done in chapter two. The previous chapter outlined the research methodology and provided specific information regarding the design used during this research. This chapter discusses how the data was analysed, and then discusses the results of the research with regards the constructs, their correlation to each other, reliability of the research data and instrument, and conclusions with regard to the research's goals and objectives.

4.1. Introduction

The primary objective of this research was to verify if goal-setting as a motivational theory had influence in productivity in an Angolan female handball team. The secondary purpose was to verify if productivity improve in an Angolan female handball team after the implementation of a productivity measurement system as ProMES. The aim of the research was to verify if one theory of work motivation - goal-setting theory - influence productivity in an Angolan female handball team, using the ProMES system as a work tool to measure and improve productivity in a highly competitive domain.

TS is an activity in which a group of athletes, on the same team, practice/work together to accomplish an ultimate goal which: to win. Team members (board, coaches, athletes and staff) set goals, make decisions, communicate, co-operate, manage conflict, and solve problems in a supportive, trusting environment in order to accomplish the team objectives. This can be seen in a sport such as handball.

TS rely on all of the athletes working together equally in order to succeed at the task at hand, this mean the whole is bigger than the sum of the parts.

The aim of every coach as a leader should be to create a team that is a collectivist, interactive group whose primary focus is working together to achieve a common goal. Goals are like magnets that attract athletes to higher ground and new horizons; they have been proven to be effective in increasing long-term motivation and act as a focus of ones efforts. They give focus, aim and purpose. Goal-setting is the most popular and effective performance-enhancement and productivity technique used in sports. Over 90% of all business studies and almost 80% of all sports studies demonstrate goal-setting effects, normally within six weeks or less (Garrison, 2009).

However, for the success of goal-setting, the athletes' guidance for the task is of vital importance (Newton, 2001), as collectivism and co-operation are important dimensions of teamwork (Salas *et al.*, 2005). Three different questionnaires were employed to show that:

- i. The athletes are task-oriented;
- ii. The athletes have sense of collectivism and co-operation; and
- iii. They are familiarized with goal-setting strategies and practices.

4.2. Questionnaires

The main coach of the senior female handball team from Clube Desportivo 1º D'Agosto, Luanda, Angola was contacted personally. He was asked to participate in the research with his team.

Approximately two weeks following the first contact, the coach was contacted again to confirm a date, time, and place to have their team complete the questionnaires. At the same time the coach provided season team goals and defined with the researcher the ProMES contingencies.

The questionnaires were distributed and explained. An explanation of the research was given to coach. The researcher read the instructions for completion of the questionnaires and informed the athletes that participation was voluntary. Assurance that all data would be kept strictly confidential was given. Informed consent was then received prior to completion of the questionnaires. Upon completion of the informed consent sheet (Appendix F), the athletes were asked to complete the following: (a) TEOSQ, (b) JPCM, and (c) GSISQ. The researcher answered any questions and requested that the participants answer each item as honestly as possible. It took approximately 45 minutes to complete the assessments and the athletes responded to a Portuguese version of the questionnaires. Upon completion the athletes were debriefed about the study and given information on how to contact the researcher for information concerning the results.

4.2.1 Data Analysis

IBM SPSS Statistics 19 and Microsoft Excel 2007 were used for the statistical analysis. The participants of the study were 17 (the entire squad) female handball athletes from the senior team of Clube Desportivo 1º D'Agosto, Luanda, Angola. The athletes ranged in age from 19 to 30 years and the average age of the participants was 23.94 years (SD=3.42). The average number of years playing handball was 12.71 (SD=3.57) years. They train approximately 8 times or 16 hours a week.

Table 16 - Summary Statistics

	Mean	Standard Deviation (SD)	Minimum	Maximum
Age	23,94	3,42	19	30
Years Experience In Current Sport	12,71	3,57	8	20
Years in Team	2,41	1,06	1	5
Minutes per game	22,65	15,01	0	55
How Many Seasons Have You Done Some Type Of Goal-Setting?	8,76	4,34	1	16

The internal consistency of the questionnaires' factors was examined with Cronbach's Alpha for each different factor (see table 17); however, due to the size of the population, it is important to have same caution about the analysis.

Table 17 - Reliability Statistics

	Cronbach's Alpha	Number of Items
<u>TEOSQ</u>		
Task	0,551	7
Ego	0,639	6
<u>JPCM</u>		
Preference	0,804	3
Reliance	0,693	3
Concern	0,695	3
Norm Acceptance	0,755	3
Goal Priority	0,947	3
<u>GSISQ</u>		
Goal Frequency	0,860	25
Goal Effectiveness	0,955	24
Commitment and Effort	0,637	3

4.2.2 Participants

Participation in the study was voluntary and the athletes were encouraged to ask questions if they had any confusion regarding the directions for questionnaires completion or meaning of the items. It took approximately 75 minutes to complete the assessments and the athletes responded to a Portuguese version of the questionnaires.

4.2.3 TEOSQ

The aim was to discover motivational profiles and a team profile within the sample by using the TEOSQ completed by the athletes. Means and standard deviations were calculated and are presented in table 18. The motivational profile of the athletes seems to be highly motivated for task-orientation, see table 21. In general, the profile of the athletes in the sample reported having higher task ($M=4.18$, $SD=0.64$) than ego-orientation ($M=1.92$, $SD=0.64$), see table 18. It is possible to observe that 95% of the athletes have a task score greater than or equal to 3.43; and 75% of them have lower than or equal to 2.33, see table 19.

Table 18 - Means and Standard Deviations for female Angolan handball players for Task and Ego

Task & Ego	Mean	Standard Deviation	Maximum	Minimum	Median
Task Score	4,18	0,4	5	3,43	4,14
Ego Score	1,92	0,64	3	1	2

Table 19 - TEOSQ Percentiles

	Task Score	Ego Score
Percentile 05	3.43	1.00
Percentile 25	4.00	1.50
Median	4.14	2.00
Percentile 75	4.43	2.33
Percentile 95	5.00	3.00
Percentile 99	5.00	3.00

Table 20- T-Test EGO vs TASK

Tests of Normality						
	Kolmogorov-Smirnov			Shapiro-Wilkson		
	Statistic	df	Sig.	Statistic	df	Sig.
Task Score	,189	17	,110	,932	17	,238
Ego Score	,124	17	,200	,944	17	,371

The correlation between the factors was calculated using the non parametric Kendall's tau coefficient (see appendix I), nevertheless it is not relevant.

Table 21 - TEOSQ scores. Participant Task-oriented score & Ego-oriented score Overall orientation

	Task	Ego	Observations
Athlete 1	4,14	2,33	high task, low ego
Athlete 2	4,14	2,50	high task, low ego
Athlete 3	4,00	2,00	high task, low ego
Athlete 4	3,86	1,67	high task, low ego
Athlete 5	3,43	1,17	high task, low ego
Athlete 6	4,43	1,50	extreme task
Athlete 7	4,43	1,50	extreme task
Athlete 8	5,00	2,17	extreme task
Athlete 9	4,14	3,00	high task, moderate ego
Athlete 10	4,14	1,17	high task, low ego
Athlete 11	4,00	1,00	high task, very low ego
Athlete 12	3,71	2,00	high task, low ego
Athlete 13	4,14	1,67	high task, low ego
Athlete 14	3,86	2,17	high task, low ego
Athlete 15	5,00	2,67	extreme task
Athlete 16	4,43	3,00	high task, moderate ego
Athlete 17	4,29	1,17	extreme task

Data collection from the Task and Ego in Sport Questionnaire.

4.2.4 JPCM

The aim was to discover the team collectivism within the sample by using the JPCM answered by the athletes. Means and standard deviations were calculated and are presented in table 22.

Table 22 - Summary Statistics JPCM

	Mean	SD	Minimum	Maximum	Median
Preference	4,45	,66	3,00	5,00	4,67
Reliance	4,15	,82	2,33	5,00	4,33
Concern	4,59	,68	2,67	5,00	5,00
Norm Acceptance	4,83	,28	4,33	5,00	5,00
Goal Priority	3,55	1,46	1,00	5,00	4,00

Table 23 - JPCM Percentiles

	Median	Percentile 95	Percentile 75	Percentile 25	Percentile 05
Preference	4,67	5,00	5,00	4,33	3,00
Reliance	4,33	5,00	4,67	3,67	2,33
Concern	5,00	5,00	5,00	4,67	2,67
Norm Acceptance	5,00	5,00	5,00	4,67	4,33
Goal Priority	4,00	5,00	5,00	3,00	1,00

- i. The team show a preference for teamwork. Note that 95% of athletes have a score greater than 3 in relation to the Preference factor (see table 23).

The team is composed of high-preference athletes ($M=4.45$; $SD=.66$; see table 22), movement toward a focus on the team should be easier and quicker for the D'Agosto team. Table 24 shows that 82.4% and 76.5% of the athletes have a strong sense of attraction to the team, and this affinity toward the team promotes co-operation.

Table 24 - JPCM Preference

	I preferred to work in those groups rather than working alone.		Working in those groups was better than working alone.		I wanted to work with those groups as opposed to working alone.	
	Count	%	Count	%	Count	%
Strongly disagree	0	,0%	0	,0%	3	17,6%
Disagree	0	,0%	0	,0%	0	,0%
Neutral	1	5,9%	1	5,9%	1	5,9%
Agree	2	11,8%	3	17,6%	5	29,4%
Strongly agree	14	82,4%	13	76,5%	8	47,1%

- ii. The athletes have reliance ($M=4.15$; $SD=.82$; see table 22) and concern ($M=4.59$; $SD=.68$; see table 22) for other team members. This reflects a sense of attraction to the team, and this affinity toward the team promotes cooperation. This reliance and concern for other team members should help the D'Agosto team, composed of high Reliance and Concern athletes, shift from a self-view to a team view of productivity and performance. Moreover, 88.2% of them feel comfortable relying on and trusting in

the team (see table 25 and 26), which means they have a collective sense of responsibility and concern.

Table 25 - JPCM Reliance

	I felt comfortable counting on group members to do their part.		I was not bothered by the need to rely on group members.		I felt comfortable trusting group members to handle their tasks	
	Count	%	Count	%	Count	%
Strongly disagree	3	17,6%	2	11,8%	0	,0%
Disagree	0	,0%	0	,0%	0	,0%
Neutral	0	,0%	4	23,5%	2	11,8%
Agree	5	29,4%	4	23,5%	0	,0%
Strongly agree	9	52,9%	7	41,2%	15	88,2%

Table 26 - JPCM Concern

	The health of those groups was important to me.		I cared about the well-being of those groups.		I was concerned about the needs of those groups.	
	Count	%	Count	%	Count	%
Strongly disagree	0	,0%	0	,0%	1	5,9%
Disagree	0	,0%	0	,0%	1	5,9%
Neutral	2	11,8%	1	5,9%	2	11,8%
Agree	0	,0%	1	5,9%	3	17,6%
Strongly agree	15	88,2%	15	88,2%	10	58,8%

- iii. The athletes accept the group norms ($M=4.83$; $SD=.28$; see table 22). Team norms are an essential component of effective and efficient team functioning and 100% of the athletes followed them and 75% accepted (see table 27). Because they are accepted by team members, they promote consensus regarding the proper way to approach and accomplish the team's task.

Table 27 - JPCM Norm Acceptance

	I followed the norms of those groups.		I followed the procedures used by those groups.		I accepted the rules of those groups.	
	Count	%	Count	%	Count	%
Strongly disagree	0	,0%	0	,0%	0	,0%
Disagree	0	,0%	0	,0%	0	,0%
Neutral	0	,0%	0	,0%	2	12,5%
Agree	0	,0%	2	11,8%	2	12,5%
Strongly agree	17	100,0%	15	88,2%	12	75,0%

- iv. The athletes put the team's goals above personal goals ($M=3.55$; $SD=1.42$; see table 22). Table 28 shows 70.6% of the athletes care more about the team's goals than their own personal goals, which supports cooperation by fostering goal and task interdependence.

Table 28 - JPCM Goal Priority

	I cared more about the goals of those groups than my own goals.		I emphasized the goals of those groups more than my individual goals.		Group goals were more important to me than my personal goals.	
	Count	Table N %	Count	Table N %	Count	Table N %
Strongly disagree	3	17,6%	3	17,6%	4	23,5%
Disagree	1	5,9%	1	5,9%	1	5,9%
Neutral	1	5,9%	2	11,8%	2	11,8%
Agree	5	29,4%	5	29,4%	5	29,4%
Strongly agree	7	41,2%	6	35,3%	5	29,4%

The correlation between the factors was calculated using the non parametric Kendall's tau coefficient (see appendix I).

Preference \leftrightarrow Reliance

It was shown that there is a significant correlation ($p<0.05$) between Preference and Reliance. This means the D' Agostinho athletes have a sense of attraction to the team and they cooperate by fostering goal and task interdependence.

Preference	← →	Concern	It was shown that there is a significant correlation ($p < 0.05$) between Preference and Concern. This reflects D' Agosto athletes have a sense of attraction to the team, and this affinity toward the group promotes cooperation.
Preference	← →	Norm Acceptance	It was shown that there is a significant correlation ($p < 0.05$) between Preference and Norm Acceptance. This benefits cooperation and prosocial behaviour of the D' Agosto athletes.
Reliance	← →	Concern	It was shown that there is a significant correlation ($p < 0.05$) between Reliance and Concern. This means the D' Agosto athletes have a sense of attraction to the team and support cooperation by fostering goal and task interdependence.
Concern	← →	Norm Acceptance	It was shown that there is a significant correlation ($p < 0.05$) between Concern and Norm Acceptance. This reflects D' Agosto athlete have a sense of attraction to the team, promotes and benefits cooperation through the development of shared norms and pro-social behaviour.

4.2.5 GSISQ

The aim was to explore top performing athletes' goal-setting (i.e., frequency, effectiveness, commitment, effort and preferences), within the sample by using the GSISQ answered by the athletes. Means and standard deviations were calculated and are presented in table 30. An interesting factor is the participants athletic ability rate versus best athletes which is not so high ($M=4.71$; $SD=1.90$; see table 29), this means their handball ego is undervalue.

Table 29 - Athletic ability rate vs. best athletes (from Lot Lower 1 to Lot Higher 9)

	Valid N	Mean	SD	Minimum	Maximum	Median	Percentile 25
Athletic ability rate vs best athletes	17	4,71	1,90	2,00	8,00	5,00	3,00

Table 30- Summary Statistics GSISQ

		Mean	SD	Minimum	Maximum	Median	Percentile 25
Goal Frequency		7,39	,97	5,92	8,84	7,71	6,68
Goal Effectiveness		7,63	1,11	4,79	9,00	7,46	6,88
Commitment and Effort		7,63	1,36	5,00	9,00	8,00	7,00
Team Goals Difficulty		2,44	,77	1,00	3,00	3,00	1,60

- i. Goal-Setting Frequency (from not often at all 1 to very often 9) → the descriptive statistics for goal-setting frequency are provided in table 31. Overall, the means and standard deviations showed that D'Agosto players frequently set goals outside of sport (M=8.88, SD=0.33), overall performance goals (M=8.47, SD=0.72), evaluating goals (M=8.35, SD=2.03), practice goals (M=8.35, SD=2.03), performance goals (M=8.00, SD=1.54), long-term goals to improve sport performance (M=7.59, SD=2.09) and team goals (M=7.12, SD=2.62).

Other important information about these athletes is that:

- a. They preferred long-term goals (M=7.59, SD=2.09) to short-term goals (M=7.06, SD=2.22);
- b. They preferred skill/technique goals (M=7.59, SD=1.77) to team goals (M=7.12, SD=2.62);
- c. They preferred difficult long-term goals (M=6.41, SD=2.24) to easy long-term goals (M=5.06, SD=2.97);
- d. They preferred easy short-term goals (M=5.53, SD=3.08) to difficult short-term goals (M=5.18, SD=2.92);
- e. They preferred goal outside of sport (M=8.88, SD=0.33) to outcome goals (M=8.29, SD=1.26);
- f. They preferred evaluating goals (M=8.35, SD=2.03) to rewards (M=7.06, SD=1.57);
- g. They do not have a preference between practice goals (M=8.12, SD=1.69) and competition goals (M=8.12, SD=2.12).

Table 31 - Summary Statistics for female Angolan handball players for Goal Frequency

	Valid N	Mean	SD	Minimum	Maximum
16 Goal outside of sport	17	8,88	0,33	8,00	9,00
12 Overall performance goals	17	8,47	0,72	7,00	9,00
21 Evaluating goals	17	8,35	2,03	1,00	9,00
15 Outcome goals	17	8,29	1,26	5,00	9,00
14 Self-confidence	17	8,24	1,35	5,00	9,00
4 Practice goals	17	8,12	1,69	3,00	9,00
5 Competition goals	17	8,12	2,12	1,00	9,00
13 Positive motivation	17	8,06	1,39	5,00	9,00
1 Performance Goals	17	8,00	1,54	5,00	9,00
10 Psychological skills goals	16	7,94	2,02	2,00	9,00
9 Physical conditioning goals	17	7,88	1,50	5,00	9,00
11 Outcome goals	17	7,65	2,69	1,00	9,00
8 Strategy Goals	17	7,65	2,18	1,00	9,00
7 Skill/technique goals	17	7,59	1,77	3,00	9,00
2 Long-term goals	17	7,59	2,09	2,00	9,00
23 Writing goals down	17	7,35	2,42	1,00	9,00
6 Team goals	17	7,12	2,62	1,00	9,00
22 Rewards	16	7,06	1,57	4,00	9,00
3 Short-term goals	17	7,06	2,22	2,00	9,00
25 Developing plan	17	7,00	2,65	1,00	9,00
18 Difficult long-term goals	17	6,41	2,24	1,00	9,00
24 Publicly disclosing goals	17	6,24	2,88	1,00	9,00
19 Easy short-term goals	17	5,53	3,08	1,00	9,00
20 Difficult short-term goals	17	5,18	2,92	1,00	9,00
17 Easy long-term goals	17	5,06	2,97	1,00	9,00

- ii. Goal-Setting Effectiveness (from not effective at all 1 to very effective 9) → Table 32 represents the means and standard deviations of how effective various goal-setting strategies had been for performance success. Overall, the descriptive statistics revealed D'Agosto players believed positive motivation (M=8.24, SD=0.97), physical conditioning (M=8.06, SD=0.97), self-confidence (M=8.06, SD=1.29), skills and technique (M=7.93, SD=1.22), competition (M=7.88, SD=1.27), and practice goals (M=7.81, SD=1.38) were most effective in helping develop as an athlete. In addition, outcome goals/non-sport goals (M=7.94, SD=1.20) and overall performance goals

($M=7.71$, $SD=1.93$), ($M=6.63$, $SD=1.86$) were thought to be most effective for improving their quality of life.

Other important information about these athletes is that

- a. They believed long-term goals ($M=7.65$, $SD=1.54$) succeed more than short-term goals ($M=6.65$, $SD=2.37$);
- b. They believed competition goals ($M=7.88$, $SD=1.27$) succeed more than practice goals ($M=7.81$, $SD=1.38$);
- c. They believed skill/technique goals ($M=7.93$, $SD=1.22$) succeed more than team goals ($M=7.29$, $SD=2.08$);
- d. They believed skill/technique goals ($M=7.59$, $SD=1.77$) succeed more than team goals ($M=7.12$, $SD=2.62$);
- e. They believed self-confidence ($M=8.24$, $SD=1.35$) succeed more than positive motivation ($M=8.06$, $SD=1.39$);
- f. They believed outcome goals ($M=7.94$, $SD=1.20$) succeed more than goal outside of sport ($M=7.53$, $SD=1.62$);
- g. They believed easy long-term goals ($M=7.65$, $SD=1.84$) succeed more than difficult long-term goals ($M=6.94$, $SD=2.26$);
- h. They believed easy short-term goals ($M=7.71$, $SD=1.31$) succeed more than difficult short-term goals ($M=7.53$, $SD=1.77$);
- i. They believed evaluating goals ($M=8.35$, $SD=2.03$) succeed more than rewards ($M=7.06$, $SD=1.57$).

Table 32 - Summary Statistics for female Angolan handball players for Goal Effectiveness

	Valid N	Mean	SD	Minimum	Maximum
13 Positive motivation	17	8,24	0,97	6,00	9,00
14 Self-confidence	16	8,06	1,29	5,00	9,00
9 Physical conditioning goals	17	8,06	0,97	6,00	9,00
24 Developing plan	17	8,06	1,34	4,00	9,00
15 Outcome goals	17	7,94	1,20	6,00	9,00
22 Writing goals down	17	7,94	1,25	5,00	9,00
8 Strategy Goals	16	7,94	1,24	5,00	9,00
7 Skill/technique goals	15	7,93	1,22	5,00	9,00
5 Competition goals	17	7,88	1,27	4,00	9,00
10 Psychological skills goals	17	7,82	1,67	4,00	9,00
4 Practice goals	16	7,81	1,38	5,00	9,00
12 Overall performance goals	17	7,71	1,93	1,00	9,00
19 Easy short-term goals	17	7,71	1,31	4,00	9,00
17 Easy long-term goals	17	7,65	1,84	3,00	9,00
2 Long-term goals	17	7,65	1,54	4,00	9,00
16 Goal outside of sport	17	7,53	1,62	3,00	9,00
11 Outcome goals	17	7,53	1,59	4,00	9,00
20 Difficult short-term goals	17	7,53	1,77	3,00	9,00
1 Performance Goals	17	7,41	1,46	4,00	9,00
6 Team goals	17	7,29	2,08	1,00	9,00
21 Evaluating goals	17	7,06	1,71	3,00	9,00
23 Publicly disclosing goals	17	7,06	2,49	1,00	9,00
18 Difficult long-term goals	16	6,94	2,26	1,00	9,00
3 Short-term goals	17	6,65	2,37	1,00	9,00

- iii. Commitment and Effort (from not at all 1 to very much 9)→ Descriptive statistics pertaining to commitment and effort are presented in table 33. Overall, D'Agosto players had a strong belief that a commitment to a specific goal affected their ability to successfully reach that goal ($M=7.82$, $SD=1.19$). In addition, most give greater effort for easy goals ($M=7.59$, $SD=1.77$) than for difficult goals ($M=7.47$, $SD=2.24$).

Table 33 - Summary Statistics for female Angolan handball players for Goal Commitment and Effort

	Valid N	Mean	SD	Minimum	Maximum
1 Commitment to a specific goal	17	7,82	1,19	5,00	9,00
2 Effort for easy goals	17	7,59	1,77	3,00	9,00
3 Effort for difficult goals	17	7,47	2,24	1,00	9,00

- iv. Motivational Factors (from 1 = most important to 8 = least important)→ Table 34 provides the means and standard deviations of the motivating factors for goal-setting in order of importance. The mean rankings show that winning (M=1.35, SD=0.79), improving performance (M=2.24, SD=1.52) and improving skills & techniques (M=2.76, SD=1.92) were most effective as motivating factors.

Table 34 - Summary Statistics for female Angolan handball players on Motivating Factors

Ranking	Motivating Factors	Mean	Standard Deviation	Maximum	Minimum	Median
1	1 Winning	1,35	0,79	4	1	1
2	2 Improving Performance	2,24	1,52	7	1	2
3	3 Improving Skills & Techniques	2,76	1,92	6	1	2
4	6 Improving Psychological Skills	3	2,09	6	1	3
5	5 Improving Conditioning	3,12	1,87	7	1	3
6	4 Improving Sport Strategies	3,18	2,16	7	1	4
7	7 Social/Affiliation	5,06	2,86	8	1	7
8	8 Enjoy/Rewarding feeling	5,12	3,1	8	1	6

- v. Preference for Goal Difficulty (from 1 = most important to 5 = least important)→ the means and standard deviations of the rankings of preferred goal difficulty levels are provided in table 35. The descriptive statistics indicated that moderately difficult goals were ranked as most preferred by the team. The least preferred goal difficulty level was very easy goals.

Table 35 - Summary Statistics for female Angolan handball players for Goal Difficulty

Ranking	Motivating Factors	Mean	Standard Deviation	Maximum	Minimum	Median
1	4 Moderately Difficult	2,35	1,37	5	1	2
2	3 Moderate	1,65	0,93	4	1	1
3	5 Very Difficult	2,24	1,52	5	1	1
4	2 Moderately Easy	2,76	1,2	5	1	3
5	1 Very Easy	3,18	1,7	5	1	3

The simple correlations between the factors indicated using the non parametric Kendall's tau coefficient (see appendix I):

Goal Frequency ← Goal Effectiveness It was shown that there is a significant correlation ($p < 0.05$) between Goal Frequency and Goal Effectiveness. This means frequency is a stock factor of effectiveness.

Goal Frequency ← Commitment and Effort It was shown that there is a significant correlation ($p < 0.05$) between Goal Frequency and Commitment and Effort. This means frequency is a stock factor of commitment and effort.

Commitment and Effort ← Goal Effectiveness It was shown that there is a significant correlation ($p < 0.05$) between Commitment and Effort and Goal Effectiveness. This means effectiveness needs commitment and effort.

Team Goals Difficulty ← Goal Frequency It was shown that there is a significant correlation ($p < 0.05$) between Team Goals Difficulty and Goal Frequency. This means is important to goals with a grade of difficulty; otherwise the athletes do not use them.

Team Goals Difficulty ← Goal Effectiveness It was shown that there is a significant correlation ($p < 0.05$) between Team Goals Difficulty and Goal Effectiveness. This means a goal with a grade of difficulty brings concentration and focus.

Team Goals Difficulty ← Commitment and Effort It was shown that there is a significant correlation ($p < 0.05$) between Team Goals Difficulty and Commitment and Effort. This means the athletes need a grade of difficulty to work on the limits.

4.2.6 Discussion

4.2.6.1 TEOSQ

The motivational profile of the Angolan female handball players seems to be highly motivated for task-orientation rather than ego-orientation, [4,18 vs. 1,92 (table 19)].

According to Jagacinski & Nicholls (1984), the two independent dimensions of goal orientation are present in all athletes and the degree to which each dimension exhibits itself is the athlete's goal orientation.

“Athletes who are higher in task-orientation are more likely to have a desire to enter and strive for success in sport competition (Competitiveness) and to reach personal goals in sport (Goal Orientation). Similarly, athletes who are more ego oriented are also more likely to have a higher desire to enter and strive for success in sport competition (Competitiveness), and to win in interpersonal competition in sports (Win Orientation). Task-orientation in sport is not related to the desire to win in interpersonal competition in sport (Win Orientation), and ego-orientation in sport is not related to the desire to reach personal goals in sport (Goal Orientation). In conclusion, the more task-oriented the athletes, the more competitive and goal oriented they are. The more ego-oriented the athletes, the more competitive and win oriented they are.” Lee (2005:78)

Fowling the words of Lee (2005), D'Agosto athletes are goal oriented and competitive, and according to Duda & Nicholls (1992) they are more likely to believe that working together contributes to achievement. The teamwork involved in handball revolves around the desire to improve all facets of the game.

4.2.6.2 JPCM

There is substantial consensus that an essential component of effective team functioning is cooperation among individual members (Stevens & Campion, 1994; LePine *et al.*, 2000), in handball it is the same especially because it is a cooperative sport. One factor purported to enhance individuals' propensities to cooperate in team contexts is collectivism (Cox *et al.*, 1991; Wagner, 1995; Earley & Gibson, 1998).

“In a broad sense, collectivism represents the degree to which individuals hold a general orientation toward group goals, a concern for the well-being of the group and its members, an acceptance of group norms, and a tendency toward cooperation in group contexts (Wagner & Moch, 1986; Triandis, 1995; Wagner, 1995). “ Dierdorff *et al.* (2010:18).

Because the D'Agosto team needs elevated levels of collectivism for team productivity and performance, we used the average level of JPCM to describe the level of collectivism within a

team. The results show a strong collectivism of the D'Agosto female handball team ($M=4.33$, $SD=1.12$) and this will contribute to improve productivity and achieve goals.

However, three facets of collectivism have a major influence in goal-setting and of course in productivity: Preference, Norm Acceptance and Goal Priority.

Preference in this research means one's preference for working in a team setting. According to Jackson *et al.* (2006), those high in Preference believe that teams are generally more productive, the athletes like to be members of the team and tend to define their identity by membership in that team. Higher quality of cooperation among team members serves to amplify the productivity gains over time (Dierdorff *et al.*, 2010).

The results show a strong Preference of the D'Agosto athletes: $M=4.45$, $SD=0.66$.

Norm Acceptance and Goal Priority have a strong influence on team productivity because they directly benefit the cooperation required by the interdependence of the defined team task. The results show a strong Norm Acceptance ($M=4.82$, $SD=0.36$) and a good level of Goal Priority ($M=3.55$, $SD=1.46$) of the D'Agosto athletes.

Goal Priority is fundamental for goal-setting and means putting the needs of the group above personal goals. Salas *et al.* (2005) noted that engaging in this form of goal priority is a hallmark of a successful team, and is correlated with successful team member productivity (Cotton, 2009).

Commitment to team goals is important when task interdependency is high rather than low (Aube' & Rousseau, 2005), and this also suggests that teams composed of athletes with high Goal Priority would display higher levels of team productivity during the competition season. According to Dierdorff *et al.* (2010) Goal Priority is particularly important for continuing organisational teams. That is, the demands of the team compete against other team's demands, but valuing the team's goals may be the basis for the continued motivation athletes need to consistently apply effort toward the team's task.

4.2.6.3 GSISQ

In the present research, the female D'Agosto handball players frequently set goals outside of sport, overall performance goals, evaluating goals, practice goals, performance goals, long-term goals to improve sport performance and team goals.

The players believed positive motivation, physical conditioning, self-confidence, skills and technique, competition, and practice goals were most effective in helping develop as an

athlete. In addition, outcome goals/non-sport goals and overall performance goals were thought to be most effective for improving their quality of life.

All players had a strong belief that a commitment to a specific goal affected their ability to successfully reach that goal. In addition, most gave greater effort for difficult goals than for easy goals. For them winning, improving performance and improving skills & techniques were most effective as motivating factors.

Most of the athletes set goals motivated by improving productivity. However, they preferred moderate to very difficult but when setting performance goals difficulty in making the task is the stone key. Specifically, moderately difficult goals were preferred most and moderately easy goals were preferred least. These results support previous findings related to other athletes, however from individual sports (Weinberg, 1994; Burton *et al.*, 1998).

The findings of this research indicate that female D'Agosto handball athletes, regardless of their level of ability, not only select moderately difficult goals over easy and difficult goals but also have similar goal-setting strategies related to frequency and effectiveness. This is support by Weinberg *et al.* (1997).

There is a positive influence of goal acceptance on productivity and performance; it is easier for a team sport to accept their team goals because these goals clearly represent winning or losing, and the respective consequences. Although, as Stout (1999) mentions athletes that frequently set goals were more likely to be effective in achieving their goals. Moreover, many of the athletes and coaches placed a higher priority on product-related goals (outcome goals) than on process-related goals (improving form, technique and strategy and improving overall productivity). Nevertheless, D'Agosto could be mentioned by the effectiveness of process-related (individual improving and overall productivity) and product-related goals (winning).

Burton & Raedeke (2008) in their research supported the fact that goals setting affect performance by directing attention, mobilizing effort, increasing persistence, and motivating strategy development. Goals are like a magnet that attracts athletes to higher ground and new horizons. They give their eyes a focus, their mind an aim, and their strength a purpose.

This Angolan female handball team is a good example of how goal-setting, when well defined, can be like a magnet. The team believes strongly that the goal-setting proposed by the coach and club is very ambitious (see appendix H) - to win the Angolan National Championship. However, for 40.91% (9 players, see appendix H) it is a long term goal and they work towards that; the truth is they won the national championship for the first time.

4.2.7 Final discussion

The aim of the first research hypothesis (see section 1.3) was to show that goal-setting as motivational theory influences productivity in a selected Angolan female handball team. To do this the athletes had to combine three variables (work/goal orientation, collectivism/cooperation and goal-setting practice) and three questionnaires were used to study the influence of goal-setting in productivity.

In general, the profile of the D'Agosto athletes in the sample reported having higher task (M=4.18, SD=0.64) than ego-orientation (M=1.92, SD=0.64), see table 15. This means a strong task-orientation which represents an adaptive achievement orientation that guides D'Agosto athletes to set controllable and achievable goals (Ntoumanis, 2001). The task goals encourage individuals to stay motivated and committed in sport. For the task oriented D'Agosto athlete, skill improvement, sport mastery, and exerted effort are fundamental to perceptions of goal accomplishment.

However, a group of individuals or players is not a team. A handball team is a complex entity where the interconnectedness between individual players and the team as a whole is essential. In other words the team must be collectivist, this means one for all and all for one. A collectivist team is the one where the members have a sense of attraction for the team, they cooperate, they trust each other, they accept the team rules and the team comes before everything. The D'Agosto team has this (M=4.33, SD=1.12; see table 21). According to Dierdorff *et al.* (2010) the relationships between collectivism and team performance vary as a function of the specific facets of collectivism, in this case vary positively:

- i. The athletes show a preference for teamwork. Note that 95% of athletes have a score greater than 3 about Preference factor (see table 25). The team is composed of high-Preference athletes (M=4.45; SD=.66; see table 19) and individuals high on the Preference facet emphasize relationships with in-group members and prefer to exist within the bounds of a group (Jackson *et al.*, 2006), because of this, the athletes/team during the time they will stay together will develop strong emotional bonds among team members, and over time may disrupt and/or augment individual-level motivation (e.g., Janis, 1972).
- ii. The athletes rely on (M=4.15; SD=.82; see table 23) other team members. Individuals high on the Reliance facet believe that one person's responsibility is the responsibility of the entire group. Moreover, they have a collective sense of responsibility that leads them to feel comfortable relying on and trusting in the group (Jackson *et al.*, 2006). These athletes/team seem to trust each other and according to Larson (2007) this is a

foundational element necessary for the development of teamwork, because this trust leads to the acquisition of collective norms and a common group identity and without trust as a foundation, athletes cannot progress towards a collective identity (Larson, 2007).

- iii. The athletes have concern ($M=4.59$; $SD=.68$; see table 23) for other team members. Individuals high on the Concern facet are motivated by a concern for the well-being of the entire group and its members (Jackson *et al.*, 2006).
- iv. The athletes accept the group norms ($M=4.83$; $SD=.28$; see table 23). Team members high on Norm Acceptance focus on the norms and rules of the in-group and comply with these norms in order to foster harmony with the team (Jackson *et al.*, 2006). Individual attitudes and preferences are secondary to team norms for these team members (Ho & Chiu, 1994; Triandis, 1995). Team norms are an essential component of effective and efficient team functioning (Bettenhausen & Murnighan, 1991; Wageman, 1997) and because the D'Agosto athletes accepted them, they promote consensus on the proper way to approach and accomplish the team's task (Chatman & Flynn, 2001).
- v. The athletes put the team's goals above personal goals ($M=3.55$; $SD=1.42$; see table 23). Team members high on Goal Priority are guided by a consideration for the in-group's interests. With these individuals, team goals take precedence over individual goals even when it causes them to make sacrifices (Jackson *et al.*, 2006). In this sense, team members high on Goal Priority confer primacy to goals of the team rather than their own personal goals (Triandis, 1995). Because goals increase effort toward the goal-related task (Locke & Latham, 2002), D'Agosto athletes should have motivation, maintain effort, and persist toward team goals.

The individual/team goal-setting strategies and practices are fundamental for goal-setting success, because athletes/team that frequently set goals were more likely to be effective in achieving their goals.

Participation is a key consideration for setting effective strategies and practices goals with a team, and the D'Agosto athletes consider Dialogue ($M=3.65$; $SD=2.23$; see appendix H) and Participation ($M=4.00$; $SD=2.47$; see appendix H) are missing on the team goal-setting. These low values can be a situation, according to Wegge (2000) when a high degree of interdependence between team members (it is the case, because handball is a complex game)

is required, participation in goal-setting does provide significant performance and motivational benefits.

Another key consideration for setting effective strategies and practices goals with a team is Commitment and Effort, and the D'Agosto athletes' commitment and effort to achieve the goals are strong ($M=7.63$; $SD=1.36$; see table 26). Commitment and effort is generally understood in an expectancy-value framework; and is a function of the expectancy that goal attainment is possible, and the attractiveness or value placed on reaching the team goal (Weldon & Weingart, 1993). The attractiveness of the D'Agosto team goal is influenced by the value of team membership for the individual which is high (see Preference factor), and the sense of achievement and success experienced by individual team members when the team as a whole achieves its goal (Weldon & Weingart, 1993).

There are three important correlations between the questionnaires using the non parametric Kendall's tau coefficient:

Table 36 - Most important correlations between questionnaires

Task-orientation (TEOSQ)	← →	Norm Acceptance (JPMC)	It was shown that there is a significant correlation ($p<0.05$) between Task-orientation and Norm Acceptance. This means when the D' Agosto athletes are less task-involvement or the mastery of skill they lost the focus on self-improvement and endorse effort and persistence to optimize performance, they have tendency to have a minor cooperation and prosocial behavior (Norm Acceptance).
Preference (JPMC)	← →	Goal Effectiveness (GSISQ)	It was shown that there is a significant correlation ($p<0.05$) between Preference and Goal Effectiveness. This means when the D' Agosto athletes increase the team's sense of attraction and cooperation the goal effectiveness is more effective.
Concern (JPMC)	← →	Goal Frequency (GSISQ)	It was shown that there is a significant correlation ($p<0.05$) between Concern and Goal Effectiveness. This reflects when D'Agosto athletes lost their team's affinity and cooperation the goal frequency tended to diminish.

A team like D'Agosto is performing a game with tasks that require significant cooperation and interdependence, an effective approach is likely to be setting individual goals focused on maximising each athlete's contribution to the team's capacity to productivity effectively in

addition to an overall team goal (Crown & Rosse, 1995). In this way, the team's productivity is made the priority, rather than each team member focusing exclusively on her particular input and productivity.

4.3. ProMES Intervention

The ProMES intervention was done in three major steps:

- i. Identifying objectives;
- ii. Defining indicators that measure the objectives; and
- iii. Designing contingency graphs that differentiate the priorities of these indicators.

To summarise, a design team was formed comprising of a main coach and a facilitator (researcher) familiar with ProMES. This design team meets to develop a measurement system for the team as a whole and subsystems, to identify the team's objectives and corresponding quantitative measures (indicators) that assess how well the team is meeting the objectives (Carron *et. al*, 2005). According Roth et al. (2010:4) "[...] this allows for team feedback reports as well as personal feedback reports for individual players, which is the most effective combination of feedback in TS".

Objectives can be considered the main tasks of a team. In a sports setting, objectives should be the most important aspects of the game that when combined, lead to overall team performance.

Three total objectives were identified:

- i. Improve defense;
- ii. Improve attack/offense; and
- iii. Improve attack/offense transition.

After objectives were agreed upon, the design team facilitated one brainstorming session to develop indicators. Indicators are quantitative measures of how well objectives are being met. The athletes must have control over the indicator being measured, each athlete must understand the indicator, and the indicator must measure what it is intended to measure (Pritchard, 1990). The ability to control that which is measured leads to greater motivation.

The objectives was approved by higher management (Club Vice-president) and indicators by coaches' staff, and then approved in a formal meeting with the design team.

4.3.1 D' Agosto Objective and Indicators

The objective and indicators were the following:

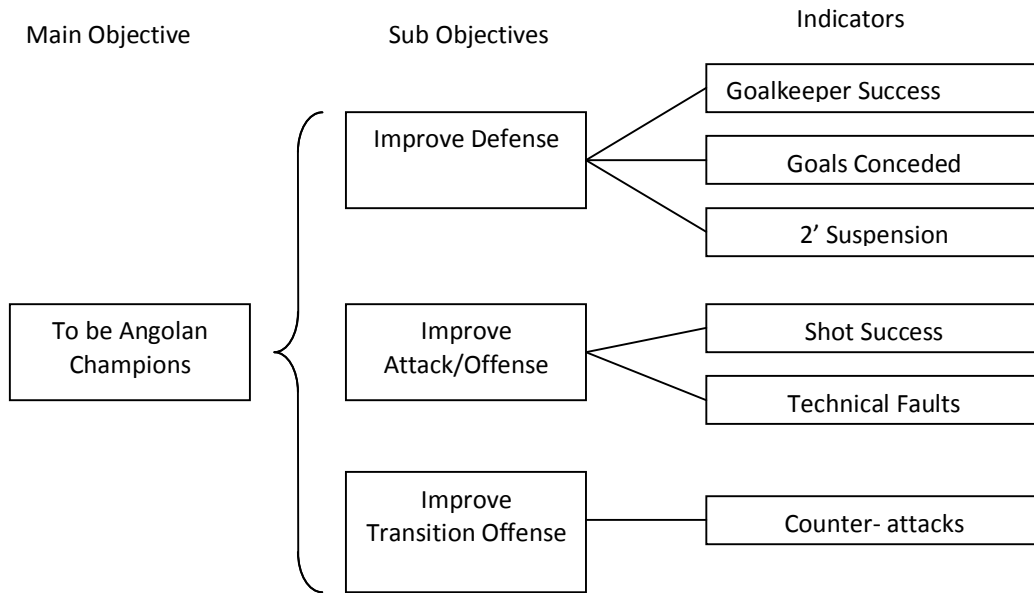


Figure 12 - D’Agosto Female Handball Team Objectives and Indicators

Table 37 - D’Agosto Female Handball Team Objectives and Indicators

Main Objective: To be Angolan Champions
Sub Objectives: Improve Defense Improve Attack/Offense Improve Transition Offense
Indicators (Prudente <i>et al.</i> , 2004): Percentage of Goalkeeper Success Percentage of Shot Success Number of counter-attacks scored goals Number of counter Goals Conceded Number of 2’ Suspension Number of Technical Faults

Table 38 - Objectives and Indicators explanation

Objective	Indicators
1. A proficient keeper can be the difference between a competitive team and a mediocre team.	Goalkeeper Success – Percentage of defending the goal (balls received in relation with the balls saved by goalkeeper).
2. Doing high quality decision from field players in shots.	Shot Success – Percentage of shots that scored in goals.
3. Doing fast and take advantage of a good recovering balls. “[...] the score efficient (winning) teams were found to be characterized by short continuous attacks, especially in the form of counterattacks [...]” Rogulj (2004).	Counter-Attack Success – Number of counter-attack (fast breaks) scored.
4. “Attack won a game, defence won a championship”. Less goals conceded means strong attitude in defense.	Goals Conceded – Number of goals conceded.

5. Play by the rules and do not be in minority.	2 Minutes Suspension – Number of teams' 2' suspension
6. Decrease team mistakes.	Technical Faults – Number of lost balls by team mistake.

4.3.2 D' Agosto Contingencies

Once the objective and indicators were approved, the design team developed the contingencies. The steps to produce contingencies are described in Pritchard *et al.* (2008).

Contingencies are a type of graphic utility function relating variation in the amount of the indicator to variation in team effectiveness. In other words, it is a function that defines how much of an indicator is good for the team. Contingencies capture the relative importance of different indicators, translate how much was done (descriptive feedback) into how good that was (evaluative feedback); allow for an overall performance score, and identify priorities for improvement.

Effectiveness is defined as the amount of contribution being made to the team. It ranges from -100, through 0 to +100. The zero point is defined as the amount of the indicator just meeting minimum expectations. Indicator amounts above this expected level get a positive effectiveness score. The higher the unit is above this expected level, the higher the effectiveness score. Indicator amounts below the expected level receive a negative effectiveness score. The design team asked, "What is the maximum feasible value that the team could do on each of the indicators under ideal conditions?" In other words, if everything went perfectly, everyone played as hard as they could, and all staff worked well, how high could the indicator go with existing athletes, facilities, etc. Contingency development was completed in eight hours for the three indicators. For example, the maximum level for the indicator "percentage of shot success" is 65% which would lead to an effectiveness score of 80. The minimum level is 40% which would lead to an effectiveness score of -80. This means that reaching the minimum level would be the same as detrimental for overall performance as reaching the maximum level would contribute to success. The contingency relates indicator amounts to the effectiveness scores. As shown in table 39, most of the indicators share this relationship.

Table 39 - ProMES Contingency Worksheet, Angola National Championship

Indicator	Maximum Level	Minimum Expected Level	Minimum Level	Rank of Max.	Effectiveness Score: Maximum	Rank of Min.	Effectiveness Score: Minimum
Percent of Goalkeeper Success	43%	33%	25%	1	+80	1	-80
Percent of Shot Success	68%	53%	43%	2	+80	2	-80
Number of counter attacks (fast breaks) scored goals	10	8	6	3	+70	3	-70
Number of Goals Conceded	21	23	25	4	+70	4	-70
Number of 2' Suspension	2	4	6	5	+60	5	-60
Number of Technical Faults	10	15	19	6	+60	6	-60

Upon approval of the contingencies, the feedback system was finished and ready for implementation. Normally, a member of team staff collects data (statistics) during the match and transforms that data into indicators. After that a feedback report is provided to coaches who in turn provide it to teams members during regular feedback meetings. However, in this case this work was done by the facilitator, contingencies had been integrated, which corresponds to an effectiveness score. The contingencies rescale all the indicators to a common metric of effectiveness. Thus, they can be added together to produce an overall effectiveness score for that match or competition. Other aspects of the feedback included plots of the overall effectiveness score over time and changes in indicator scores from match to match.

After the decision that the team's main goal was to win the national championship, the coach's staff had to study which competitors had to win and create an index of the relative difficulty of each match (for example, with values ranging from 1 to 5, with 1 = easy and 5 = maximum difficulty). The games against competitors that have the same aim as D'Agosto will be the matches' highest difficulty (level 5). Since D'Agosto's goal is to win the championship the relative difficulty of the matches must coincide with the absolute difficulty. Normally, it is also interesting to readjust the real difficulty of the match depending on whether teams play home

or out, or the events that have occurred during the season. If after a serious and profound analysis the coach's staff encounter many hard games "5" (level), they may need to review the goal-setting for the season. According to this the ProMES contingencies must vary according to the competitor (opponent), which means it will be possible to compare effectiveness.

The feedback meetings (first practice session after a match) were held with all team (coaches and athletes) to review the feedback report, identify ways to make improvements, and evaluate previous improvement attempts. Whereby the coach's team essentially designed the system and management approved it, an understanding and alignment of organisational goals and objectives was more likely because any misunderstandings or misalignments were discussed and resolved.

This process of regular feedback reports and meetings goes on over time in a continuous improvement model. The feedback system must be reviewed periodically to determine whether changes are necessary.

4.3.3 Participant and Procedure

The participant in this study was the senior female handball team from Clube Desportivo 19 D'Agosto, Luanda, Angola.

The implementation of ProMES started in January 2011 and ended with the National Championship match (July 8). The facilitator (researcher) was responsible for collecting and monitoring the match data for statistics and contingencies.

The ProMES process used with the team was that summarised in the dissertation earlier and followed the procedures outlined in Pritchard (2008). The design team met almost every day for one week to develop a single set of objectives, indicators, and contingencies that would apply to the team. The system was then approved by higher management (Club Vice-president) and indicators by the technical team (coaches). The three objectives and six indicators developed by the design team are shown in table 37. Feedback was given through a Microsoft Excel designed to be used with ProMES. This excel provides both for entry of indicator data and a variety of types of feedback reports.

The team received their first feedback reports in April 2011, after the first official season match. Thus, data collected during 11 matches [Regional Championship (10 matches) and Angola Super Cup (one match)] had been considered experimental data and data collected in five matches (National Championship and teams with level 4 and 5 of difficulty) was considered data under the feedback condition. The club had no baseline information about

the team; however, from the experimental data there are seven matches level 5 and 4 that will be used to compare the evolution between preparation matches and the championship.

The Angolan National championship's match system:

- i. The championship was played in the format of a tournament. It consisted of a preliminary round and a final;
- ii. The preliminary round was played in a group consisting of six teams, in which all teams competed against each other (round robin system);
- iii. After the completion of the preliminary round, the first and second ranked teams play a playoff on the best-of-three matches; and
- iv. Calendar (match sequence) and team level according table 40.

Table 40 - Matches sequence and difficulty

Match Sequence / Team name	Petro	ASA	Marítimo	Electro	Ferrovia	Middle Final Electro	Playoff Final Petro
Team level	5	4	2	2	1	2	5 5 5

4.3.4 Effects of the ProMES Intervention

Productivity will improve in a female handball team after the implementation of a productivity measurement system like ProMES, is the second work hypothesis. Table 41 shows these results.

Table 41 - Basic Productivity Data - Preparation Matches

Basic Productivity Data - Preparation Matches			
Objectives & Indicators	Expected Value	Indicator Value	Effectiveness Score
Shot Success	53%	31%	-40
Goalkeepers Success	42%	62%	21
Counter-Attack Success	12	8	-33
Goals conceded	19	26	-60
2 Minutes Suspensions	4	5	-17
Technical Faults	14	15	-16
Overall Effectiveness Score =			-145

Table 42 - Basic Productivity Data - National Championship

Basic Productivity Data - National Championship			
Objectives & Indicators	Expected Value	Indicator Value	Effectiveness Score
Goalkeepers Success	33%	37%	64
Shot Success	53%	58%	37
Counter-Attack Success	8	4	-126
Goals conceded	23	22	84
2 Minutes Suspensions	4	2	54
Technical Faults	15	12	31
Overall Effectiveness Score =			144

Because contingencies rescale each measure to the common metric of effectiveness, a single, overall effectiveness score can be formed by summing the effectiveness scores for each indicator, table 41 shows that. Table 43 indicates the teams' productivity during the tournament.

Table 43 - Indicator Match Score during National Championship

Objectives & Indicators	Indicator Match Score					Effectiveness Score Average
	PETRO 5	ASA 4	PETRO 5	PETRO 5	PETRO 5	
Goalkeepers Success	31%	46%	26%	43%	36%	37%
Shot Success	58%	58%	50%	57%	67%	58%
Counter-Attack Success	5	3	2	6	4	4
Goals conceded	22	15	28	17	30	22
2 Minutes Suspensions	1	3	2	2	3	2
Technical Faults	14	14	14	11	8	12

Table 44 - Effectiveness Match Score during National Championship

Objectives & Indicators	Indicator Value Average	Effectiveness Score					Effectiveness Score Average
		PETRO 5	ASA 4	PETRO 5	PETRO 5	PETRO* 5	
Shot Success	37%	10	183	-29	107	49	64
Goalkeepers Success	58%	43	16	0	37	91	37
Counter-Attack Success	4	-70	-140	-280	0	-140	-126
Goals conceded	22	140	175	-70	315	-140	84
2 Minutes Suspensions	2	90	30	60	60	30	54
Technical Faults	12	12	0	12	48	84	31
Overall Effectiveness Score		225	264	-307	567	-26	144

Match Score

Defeat Victory Defeat Victory Victory

* This was the third match of the best-of-three matches, which means a “final”. After the scheduled time the score was a draw, 23-23. After an overtime of 10 minutes the score was again a draw, which forced a second overtime of 10 minutes with a score of 31-30 for D’Agosto. In this evaluation the author considered the full match (regular time plus two overtimes).

The design team considered the Minimum Expected Level as the “sufficient numbers” to win the matches and subsequently the championship.

The Overall Effectiveness Score or summing the effectiveness scores for each indicator shows a positive evolution during the tournament; however, because the last match had two overtimes and the contingency worksheet was made for a 60 minute match, the final number was not so strong.

Once feedback started during the championship, the D’Agosto team’s productivity improved up to the finals.

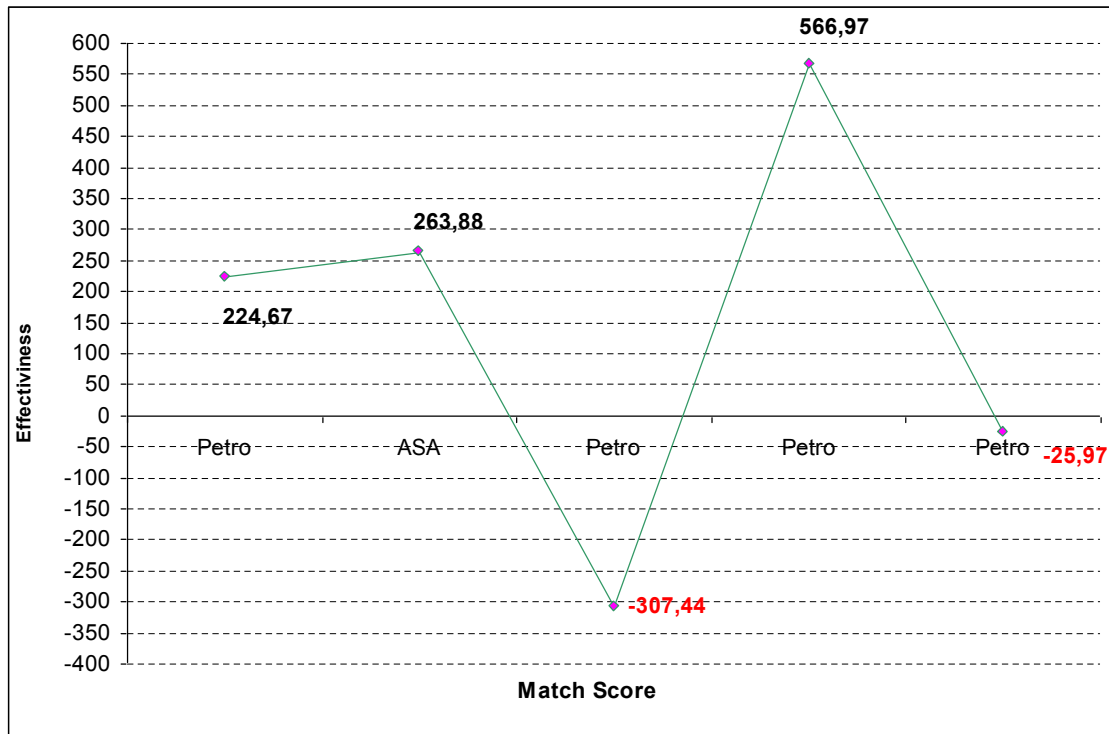


Figure 13 - Overall Effectiveness Score Graphic

4.3.5 Discussion

The primary purpose of this research was to determine the effects of the ProMES intervention on productivity. The ProMES effectiveness scores indicated gains in productivity in all indicators and the club/team objective was accomplished.

The results supports findings in Roth et al. (2010) that ProMES can be an effective way of responding to the requirements for measuring TS effectiveness and also increasing productivity in the face of stressful environments. In other words, implementing ProMES in TS does seem feasible.

ProMES align the efforts of the team's staff and athletes with the broader goals of the organisation/club by the way the measurement system is developed. The objective, indicators, and contingencies are reviewed higher management (Club Vice-president) and a key issue is how well they are aligned with broader organisational goals. Once the team goals and the measurement system are approved, the resulting feedback system provides information on how to allocate resources so as to maximize contribution to the organisation/club and it was possible to develop feedback meetings and priority setting subjects. Thus, the feedback report provided by the ProMES intervention led to increases in ambition, collectivism and task-orientation.

A possible reason for the ProMES's efficiency could be that the athletes are accustomed with measurement and feedback as these are typical aspects of elite athletes and teams. Pritchard *et al.* (2008) found that organisations that received prior feedback had lower effect sizes than those without prior feedback. Elite teams rely on feedback and measurement for training and progress therefore this could lower the effect size seen within athletics (Roth, 2007).

Finally, the coaches believed the system helped productivity and are committed to carry on using ProMES feedback.

Thus, the data from the research indicate that ProMES is a feasible system for sports feedback.

4.3.6 Practical Considerations

This was the first time these Angolan female handball athletes took the time to sit down and clarify their dreams and their opinion about how to achieve them. The main objective (to be champion) was really important as a motivational factor during the practices. By the end of this process, however, the athletes had quite a different idea of how to carry out their training. By pooling their knowledge and experience, they realized that a good idea would be to focus on those things that would have the greatest impact such as training better, be psychologically strong and to do the "invisible training", i.e. eat and rest. According to Ward *et al.* (1997) if athletes improve their productivity in practice, they will perform better in matches. This finding lends credence to the aphorism that "you play as you practice."

They were surprised when the first feedback indicated that they were not actually doing what they were supposed to do. This led to several attempts to change the way they "see" practices. They were then able to assess how good the coaches' staff vision was by reading the subsequent feedback reports. This process led to interesting improvements in their feedback scores. The steadily increasing feedback scores led to a considerable positive effect among the athletes and ultimately to victory.

Chapter 5 Conclusion

This chapter discusses the research findings based on the research results, a final summary and key findings, suggestions for future research and recommendations, with a final conclusion including contributions of this research.

5.1 Outcome of the study

Coaches, athletes and sports managers have become increasingly interested in explanations for why productivity varies among teams and new ways to improve it. This field is not new (thus the literature) but the ProMES application is, and the results of the current research yielded some important information for them. Not why productivity varies, but how to improve it. Coaches that have an in-depth knowledge of their athletes' characteristics (e.g., goal orientation, locus of control belief, confidence, physical capacity, technical and tactics skills) could develop effective training regimens for teams to fulfil the goals. Further, the coach could alter their coaching style to enhance athletic productivity. For example, a coach may need to provide more feedback to an athlete that is ego-oriented than to a task-oriented athletes. In addition, new athletes in the team might need to be encouraged to set goals to the same degree than "veterans". Sport managers and coaches could develop goal-setting programs that are consistent with the reality of the team and the club. This could provide athletes with more effective performance results.

Empirical research investigating performance analysis in TS has generally been limited to studies exploring specific aspects of the match, such as patterns of play of teams or physiological estimates of positional work rates of individual players (Taylor, Mellalieu & James, 2004; Hughes & Franks, 2005). The complex and multidimensional nature of competitive activity represents a constraint in terms of hierarchy and interpretation of the factors that influence athletic performance. This statement becomes even more pertinent in TS, where the final result, expressed in victory or defeat in a tournament or by the classification achieved in a competition, consists of the individual performances of the players in turn influenced by physical factors, psychological and technical tactical and strategic.

TS are distinguished from other groups of modes, the relevance of technical and tactical factors. This relevance is associated with the situational nature of these arrangements, so that often the decision-making behaviours overlap ducts running (Garganta & Cunha e Silva, 2000). Thus the observation and analysis of the activity of competitive players and teams represent an indispensable factor for the study of technical and tactical game (Hughes & Franks, op. cit.).

Match analysis is the objective recording and examination of behavioural events that occur during competition (Carling *et al.*, 2005). The main aim of match analysis is to identify strengths of one's own team, which can then be further developed, and its weaknesses, which suggest areas for improvement. Similarly, a coach analysing the performance of an opposition side will use the data to identify ways to counter that team's strengths and exploit its weaknesses (Ribeiro & Volossovitch, 2004; Carling *et al.*, 2009). Performance indicators are defined as the selection and combination of variables that define some aspect of performance and help achieve athletic success (Hughes & Bartlett, 2002). These indicators constitute an ideal profile that should be present in the athletic activity to achieve success and can be used as a way to predict the future behaviour of sporting activity (O'Donoghue, 2005). The indicators can be used in a comparative way with the opponents, or with other players or groups of pairs of players or even other teams, but often are used in isolation as a measure of the performance of a team or individual only (Hughes & Bartlett, *op. cit.*).

Statistics is an activity present in any competition, any TS. Performance indicators are an action or their combination and want to define certain aspects of performance. To be useful, performance indicators should be related to the performance or the outcome of games, success or failure (Hughes & Bartlett, *op. cit.*). If presented in isolation, a data set can give a distorted view of performance, ignoring other variables that may be important. In literature it is evident that many tests do not provide enough information about the performance in order to fully represent the significant events of this performance (Hughes & Bartlett, *op. cit.*). The comparison of performance between teams, team members and individuals is often facilitated if performance indicators are expressed in ratios, these proportions represent a binomial response variable (Nevill *et al.*, 2002). The fact that athletic performance depends on several factors, makes it difficult to determine which of these factors have more influence on its variation, which is why the whole is bigger than the sum of the parts.

However, in sports organisations the use of a tool which proves the team is getting better and achieving the goals is not common. This research offers the opportunity to consider ProMES a valid tool for measurement and feedback in TS productivity. Although the team's goal-setting influence and productivity improved during ProMES compared to experimental/baseline data, the reason it's increased can only be speculated.

The focus of the current intervention was on the overall productivity improvement of the D'Agosto female handball senior team, and not on athletes within the team. Thus, no athlete differences were assessed in this research's measurement. Athlete differences, however, could have impacted some of the results found within the current research. For example, athletes

vary in terms of skills, motivation, intelligence, and personality traits. Each of these could influence how much effort they put into a task or their perceptions with an outcome. Furthermore, it is not possible to say whether the athletes who left, those who joined and those who remained in the team during the intervention were different from one another.

However, the current research is in line with Ward & Carnes (2002) that suggested goal-setting interventions can influence productivity in TS, and Crown & Rosse (1995) that suggested team goal-setting is also likely to lead to increased cooperation between athletes, an increased frequency in helping behaviours, and a greater use of morale building communication between athletes. But most of all the current results show goal-setting in this team was useful and influenced productivity because:

- i. Athletes are task-oriented and it helped them to be more team-oriented (Stout, 1999);
- ii. Athletes are collectivists and it helped them to keep the team spirit (Jackson *et al*, 2006);
- iii. Athletes believed in goal-setting and it helped them to keep focus (Duda & Whitehead, 1998);
- iv. Athletes are requiring an increase of participation and dialogue during team goal-setting (Pritchard *et al*, 2007); and
- v. The productivity increase (Robbins & Judge, 2008).

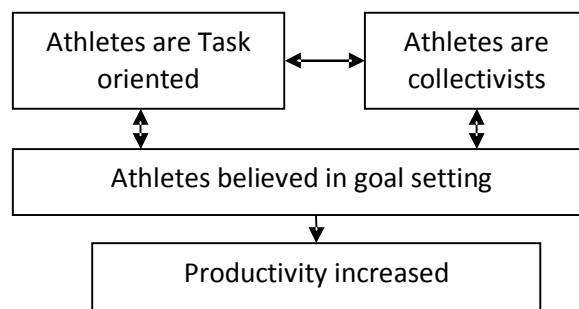


Figure 14 - Goal-setting influences productivity in an Angola female handball team.

During the ProMES intervention with an Angolan female handball team it was showed that the tool has aspects of goal-setting:

- i. Formal and clear definition of goal-setting;
- ii. Feedback meetings focus on behaviours necessary to attain those goals that will help improve productivity; and

- iii. Less formal processes such as private individual goals definition.

These aspects are supported by the findings of Frese & Zapf (1994), Locke & Latham (2002), Brown & Latham (2002) and Latham & Pinder (2005).

ProMES also promoted the collectivism by participation. During all intervention the team (coaches, athletes, board and general staff) participated heavily in formulating the measurement system and were encouraged to discuss the development process. There is considerable evidence that participation is an important issue that has positive effects on individual's performance and attitudes (Crown & Rosse, *op. cit.*; Cawley *et al.*, 1998), collectivism is essential in TS.

Finally, the teamwork was also relevant and ProMES intervention was important because:

- v. Roles and responsibilities were clarified during the development of the tool/system;
- vi. The goals were clear so the athletes performed better and everybody were more satisfied;
- vii. All team worked together to achieve objectives, cooperation and coordination were encouraged through the feedback meetings (collectivism); and,
- viii. When team met regularly to review team effectiveness and how it could be improved (feedback meetings) feel participating in something useful.

These aspects are in line with Salas *et al.* (2004), Salas *et al.* (2006) and West (2007) research.

In conclusion, this research described the results of a productivity feedback system (ProMES) supported by a motivational theory (goal-setting) designed to improve productivity for an Angolan female handball team and results indicated that there was an increase in productivity.

It would seem that:

- i. The successful team goal-setting influence in productivity remains: a) the team/athlete with the coach/board should establish a list of possible goals; b) a hierarchy of possible goals should be evaluated and the goals selected; c) in setting specific team performance goals of sufficient difficulty; d) the goal must have team and individual self-control. Goal-setting in TS is an important set of involved complex and interdependent skills which determine success and improvements that result from practice and competitive activities. What makes goal-setting a robust motivational theory for TS where athletes must be task-oriented and collectivists; and

- ii. The ProMES process itself, with its participative aspects and process of clarifying roles and expectations would be an influencing factor in these improvements, but these claims cannot be made without further examination of the intervening variables and thought processes of the teams themselves.

This research also reaffirms the relationship between motivation and productivity.

5.2 Limitations and Future Directions

This research was limited to the female senior handball team of Clube Desportivo 1º D' Agosto, Luanda, Angola. Therefore the findings should not be generalized to other TS or teams. The research represents an exploratory and descriptive evaluation of goal-setting and ProMES (an intervention aimed at enhancing the productivity of work teams within organisations through performance measurement and feedback). The qualitative paradigm allowed for an in-depth understanding of the goal-setting theory as a motivational theory which improves productivity for an Angolan female handball team.

As with any preliminary research, not all questions can be answered and additional questions are usually brought to the surface. Although the research provided important information concerning female handball athletes, goal-setting and team's productivity measurement and feedback there are certain limitations that need to be addressed. A potential limitation in the present research was that the questionnaires were used with one team and its 17 athletes which is a weak number for strong and reliable statistics. However, the consistency of the outcomes adds the value of the research.

Likewise, one application of the questionnaires during the season does not provide for a comparison over the season or from season to season. The survey design was cross-sectional because data were collected at one point in time and represented current beliefs, attitudes, and opinions of the athletes regarding goal-setting, task and ego-orientation, collectivism and organisational productivity. In survey research design, the researcher collects all data at a single point in time, analyzes all study participants as a single group, and draws conclusions from statistical results (Alden, 2007; Creswell, 2008).

Therefore, additional data from other TS and competitive teams are needed to develop reliable profiles of top performing athletes' and teams' goal-setting productivity measurement and feedback in general. Researchers should continue to conduct empirical research examining the situational and individual difference variables that influence goal effectiveness so that it

will be possible to inform managers/coaches of the best ways to set goals for their teams and themselves. They should also compare feedback and goal setting to feedback alone; analyze the effects of goal setting and feedback from a functional perspective; directly and repeatedly collect measures on a set of observable behaviors. Clarifying these issues should advance develop the knowledge and application of goal setting in improving productivity / performance.

Quantitative research is required to supplement the qualitative data presented in the current research. The results would be more reliable if similar findings can be shown over time. Likewise, longitudinal studies could determine how effective goal-setting and ProMES are improving teams in TS success.

These longitudinal studies could provide valuable information concerning changes in goal-setting and ProMES over a season and may answer questions related to how tapering in teams and goal-setting influence one another.

A potential problem encountered within ProMES has to do with contingencies [Roth et al. (2010) found the same situation], when creating contingencies, the design team had some troubles to determine the importance and range of each chosen indicator.

Additional research is needed to determine whether differences exist between top performing teams as compared to teams with lower performance. Also, further research is needed to determine differences between top level teams from different TS. Future researchers who use ProMES, or any intervention aimed at increasing productivity or goal-setting (or both), would do well to consider more variables in their design of the system.

Furthermore, although the research was undertaken using one team, this should not discredit or diminish the findings of this research for several reasons. First, there is no reason to believe that the make-up of the team in Angola was any different to the make-up of the rest of the world. Secondly, although there were only seventeen athletes these were all the players from this team (so not an issue of response rate). Finally, a critical issue is whether the findings will generalize to other Angolans teams, but also to other teams all over the world. As noted in the literature, ProMES has been effective in many settings in many countries and goal-setting as a motivational theory is well documented. Thus, the positive results found within this research are consistent with a broad pattern of similarly positive results. Therefore, although the specific variables that were examined here are similar to those examined in other researches, the odds of these findings generalizing to other TS and teams is higher based on the similarly positive results in other researches.

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Appendices

Appendix A – Handball: the game

Sources: International Handball Federation and European Handball Federation.

Introduction

Game sports are sports with two parties (teams, doubles or singles) that interact dynamically in order to score a goal/point and simultaneously to prevent the opponent from scoring (Lames, 2006). In handball, the basic idea is that a team strives to score a goal as well as to prevent their opponent from scoring. Of course this same objective holds for the opponent, too. Thus, the two teams pursue the same objective simultaneously, a feature that is typical of game sports.

Objective of the Game

Handball is a team sport in which two teams of seven players each (six outfield players and a goalkeeper) pass a ball to throw it into the goal of the other team. The team with the most goals after two periods of 30 minutes wins.

The game is quite fast and includes body contact as the defenders try to stop the attackers from approaching the goal. Contact is only allowed when the defensive player is completely in front of the offensive player, i.e. between the offensive player and the goal. Any contact from the side or especially from behind is considered dangerous and is usually met with penalties. When a defender successfully stops an attacking player, the play is stopped and restarted by the attacking team from the spot of the infraction or on the nine meter line. Handball players are allowed an unlimited number of "faults", which are considered good defence and disruptive to the attacking team's rhythm.

Goals are scored quite frequently; usually both teams score at least 20 goals each, and it is not uncommon for both teams to score more than 30 goals.

A regulation game is played in 30 minutes halves with one team timeout per half. A coin toss determines which team starts the game with a throw-off. The clock stops only for team timeouts, injuries, and at the referee's discretion.

Teams

A game is played between two teams. Seven players on each team are allowed on the court at the same time (six outfield players and a goalkeeper). Unlimited substitution is allowed. Substitutes may enter the game at any time through their own substitution area as long as the players they are replacing have left the court.

Team players, substitutes and officials

Each team consists of 7 players on court and up to 7 substitute players on the bench. One player on the court must be the designated goalkeeper differing in his or her clothing from the rest of the field players. Substitution of players can be done in any number and at any time during game play. An exchange takes place over the substitution line. A prior notification of the referees is not necessary.

Field players

Field players are allowed to touch the ball with any part of their bodies above the knee (knee included). As in several other TS, a distinction is made between catching and dribbling. A player who is in possession of the ball may stand stationary for only three seconds and may only take three steps. They must then either shoot, pass or dribble the ball. At any time taking more than three steps is considered travelling and results in a turnover. A player may dribble as many times as he wants (though since passing is faster it is the preferred method of attack) as long as during each dribble his hand contacts only the top of the ball. Therefore basketball-style carrying is completely prohibited, and results in a turnover. After the dribble is picked up, the player has the right to another three seconds or three steps. The ball must then be passed or shot as further holding or dribbling will result in a "double dribble" turnover and a free throw for the other team. Other offensive infractions that result in a turnover include, charging, setting an illegal screen, or carrying the ball into the six meter zone.

Goalkeeper

Only the goalkeeper is allowed move freely within the goal perimeter, although he may not cross the goal perimeter line while carrying or dribbling the ball. Within the zone, he is allowed to touch the ball with all parts of his body including his feet. The goalkeeper may participate in the normal play of his team mates. As he is then considered as normal field player, he is typically substituted for a regular field player if his team uses this scheme to outnumber the defending players. As this player becomes the designated goalkeeper on the court, he/she must wear some vest or bib to identify him/her as such.

If the goalkeeper deflects the ball over the outer goal line, his team stays in possession of the ball in contrast to other sports like soccer. The goalkeeper resumes the play with a throw from within the zone ("goalkeepers throw"). Passing to your own goalkeeper results in a turnover. Throwing the ball against the head of the goalkeeper when he is not moving is to be punished by disqualification ("red card").

Team officials

Each team is allowed to have a maximum of four team officials seated on the benches. An official is anybody who is neither player nor substitute. One official must be the designated representative who is usually the team manager. The representative may call team timeout once every period and may address scorekeeper, timekeeper and referees. Other officials typically include physicians or managers. Neither official is allowed to enter the playing court without permission of the referees.

Referees

A Handball match is led by two equal referees. Should the referees disagree on any occasion, a decision is made on mutual agreement during a short timeout, or, in case of punishments, the more severe of the two comes into effect. The referees are obliged to make their decisions "[...] on the basis of their observations of facts" (IHF, 2010). Their judgements are final and can only be appealed against if not in compliance with the rules.

The IHF defines 18 hand signals for quick visual communication with players and officials. The signal for warning or disqualification is accompanied by a yellow or red card, respectively. The referees also use whistle blows to indicate infractions or restart the play.

The referees are supported by a scorekeeper and a timekeeper who attend to formal things like keeping track of goals and suspensions or starting and stopping the clock, respectively. They also have an eye on the benches and notify the referees on substitution errors. Their desk is located in between both substitutions areas.

Appendix B – Drawing the contingency

By: **Paquin, Anthony R.** (2011). Associate Professor of Western Kentucky University provided by electronic e-mail.

The easiest way is to use Excel.

How to calculate the effectiveness scores for values between the inflexion points?

A possible way is to generate the effectiveness scores with any spreadsheet program (i.e., Excel). What it is necessary to do is (Shot Success example):

- Calculate the regression equation for each of the linear segments in the contingency. For example, the contingency Shot Success has 2 linear segments (35% to 50% and 50% to 80% shot success). The corresponding regression equations

$$\text{(Effectiveness Score} = \text{(Slope)} * \text{(Raw Score))} + \text{Intercept)}$$

are as follows:

1. $Y' = ((5.3333) * (X)) - 266.6667$
2. $Y' = ((2.6667) * (X)) - 133.3333$

Intercept = $Y' = aX + b$

- i. Y' = the predicted score on Y = effectiveness score
- ii. X = raw score value
- iii. a = slope of the line
- iv. b = Y intercept

Calculate the **slope**: a = rise/run

- i. Example (1st linear segment): rise = 80; run = 15 (it's the difference between 50 and 35 from the 1st linear segment), so $a = 80/15 = 5.33333$

Solve for Y intercept using known X and Y values: $b = Y - aX$

- i. Example (1st linear segment): When X = 50, then Y = 0, so
 $b = 0 - (5.33333) * (50) = -266.667$

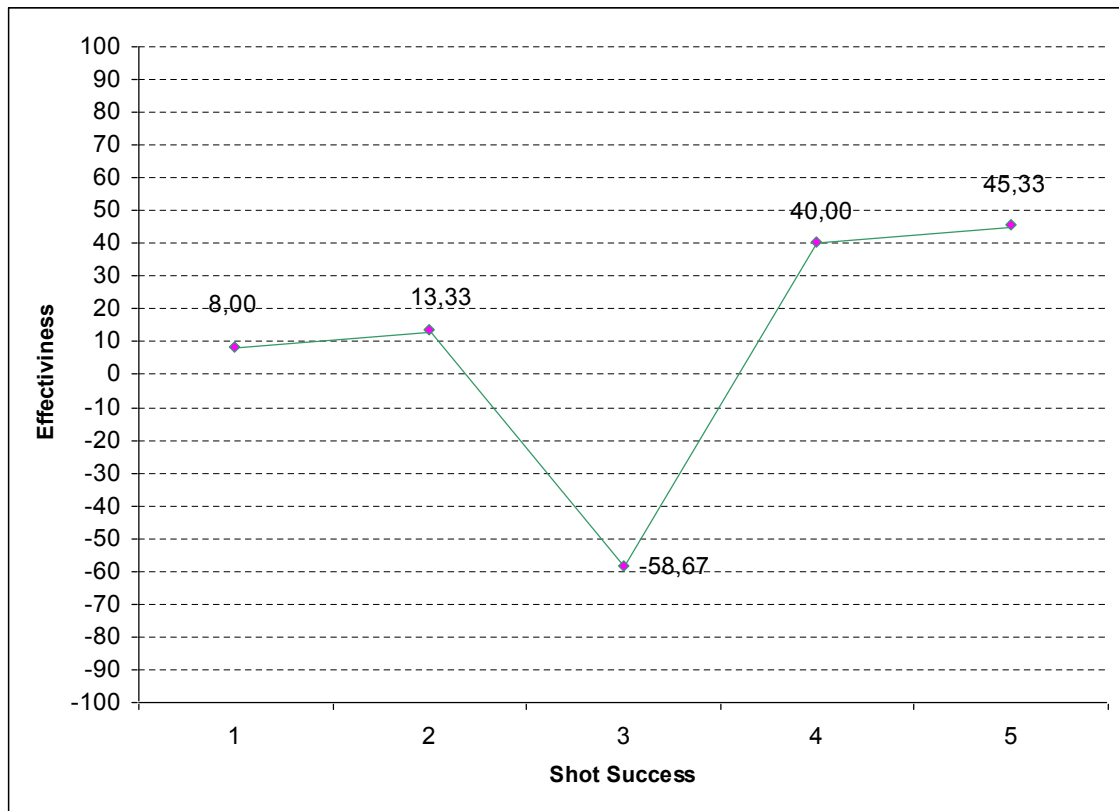
- Insert the formulas into the cell using the IF option. For example:

1. =IF(C21<51,((5.3333)*(C21))-266.6667,((2.66667)*(C21))-133.3333)
2. Note - "C21" is the cell I used to put in the raw score (i.e., Shot Success %)
 - i. All you need to do then is to type the raw scores into the X cell and then the Effectiveness scores will be generated in the cells you designate. I have done this in the attached Excel file with the raw numbers you provided to me.
 - ii. By calculating the regression equation for each linear segment and using conditional (IF, THEN) statements, you maintain the nonlinearity in the contingencies.

Note – It will be a nonlinear contingencies as long as you use the appropriate regression equation to compute the effectiveness score (i.e., make sure you use the regression equation that corresponds to the raw value).

Slope	
35	-80
50	0
80	80

	Shot Success	Effectiveness Score
Match 1	53	8,00
Match 2	55	13,33
Match 3	39	-58,67
Match 4	65	40,00
Match 5	67	45,33



Appendix C - Task and Ego-orientation in Sport Questionnaire

The Task and Ego-orientation in Sport Questionnaire (TEOSQ) (Duda & Nicholls, 1992) can be used to assess whether an individual defines success in a sporting context as mastery (task orientated) or outperforming others (ego orientated).

The TEOSQ is a thirteen item questionnaire with seven items measuring task-orientation and six items measuring ego-orientation. When completing the TEOSQ, participants are requested to think of when they felt most successful in their sport and then indicate their agreement with items reflecting task- and ego-oriented criteria.

Examples of task-orientation items included "I work really hard" and "I do my very best", whereas on the ego-orientation subscale there were items such as "The others can't do as well as me" and "I'm the best". The response scale has a Likert format ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The psychometric validity of the TEOSQ has been demonstrated by Duda (1989).

I feel most successful in sport when...	
Task Involved	Ego Involved
• I learn a new skill and it makes me want to practice more.	• I'm the only one who can do the play or skill.
• I learn something that is fun to do.	• I can do better than my friends.
• I learn a new skill by trying hard.	• The others can't do as well as me.
• I work really hard.	• Others mess up and I don't
• Something I learn makes me want to go and practice more.	• I score the most points/goals, etc.
• A skill I learn really feels right.	• I'm the best.
• I do my very best.	

Analysis

The ego orientated questions are questions: 1, 3, 4, 6, 9 and 11

The task orientated questions are questions: 2, 5, 7, 8, 10, 12 and 13

A mean score is calculated by adding all the scores for all the task orientated questions and dividing by 7 and doing the same for the ego orientated questions but dividing by 6.

This gives a mean score between 1 (low) and 5 (high) for each orientation.

Target group

This test is suitable for all athletes.

1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree

I feel most successful in sport when...	1	2	3	4	5
---	---	---	---	---	---

1. I am the only one who can do the play or skill					
2. I learn a new skill and it makes me want to practise more					
3. I can do better than my friends					
4. The others cannot do as well as me					
5. I learn something that is fun to do					
6. Others mess up "and" I do not					
7. I learn a new skill by trying hard					
8. I work really hard					
9. I score the most points/goals/hits, <i>etc</i>					
10. Something I learn makes me want to go practise more					
11. I am the best					
12. A skill I learn really feels right					
13. I do my very best.					

Translation

TEOSQ

		Discor do totalm ente 1	Discor do 2	Neut ro 3	Concor do 4	Concord o totalme nte 5
t	Eu sinto um maior sucesso no andebol quando...					
e	1. Eu sou a única que pode fazer a jogada ou a técnica.					
t	2. Eu aprendo uma nova técnica e isso faz-me desejar treinar mais.					
e	3. Eu faço melhor que as minhas amigas.					
e	4. As outras não conseguem fazer melhor do que eu.					
t	5. Eu aprendo coisas que são divertidas de fazer.					
e	6. As outras fazem asneiras e eu não.					
t	7. Eu aprendo técnicas novas treinando duro.					
t	8. Eu trabalho muito.					
e	9. Eu sou a melhor marcadora de golos.					
t	10. Quando eu aprendo "coisas" novas quero treinar mais.					
e	11. Sou a melhor.					
t	12. Quando aprendo uma técnica nova sinto-me bem.					
t	13. Dou sempre o meu melhor.					
e	Sub- Total (/6)					
t	Sub- Total (/7)					

Appendix D - Jackson Psychological Collectivism Measure

The Jackson Psychological Collectivism Measure (JPCM), developed by Jackson *et al.* (2006), is a 15-item instrument; its instructions ask respondents to think about the working groups they currently belong to and have belonged to in the past and rate how much they agree or disagree with each item. Each of the five facets is measured by three items:

The Preference facet is measured by the following items. (1) "I preferred to work in those groups rather than working alone." (2) "Working in those groups was better than working alone." (3) "I wanted to work with those groups as opposed to working alone."

Among all five, the Preference facet has had the most attention by researchers. Preference here means one's preference for working in a team setting. According to Jackson *et al.* (2006), those high in Preference believe are people who like to be a part of a group and tend to define their identity by membership in those groups.

The Goal Priority facet is measured with the following three items: (1) "I cared more about the goals of those groups than my own goals." (2) "I emphasized the goals of those groups more than individual goals." (3) "Group goals were more important to me than my personal goals."

Goal Priority means putting the needs of the group above personal goals. Salas *et al.* (2005) noted that engaging in this form of goal priority is a hallmark of a successful team. According to Salas *et al.*, the willingness to sacrifice when needed for the good of the team requires the teams to have certain foundations in place (i.e., trust). As measured in Jackson *et al.*'s JPCM, Goal Priority, and every other facet, is an attitude one brings with him or her to each new team setting that, when present in high levels, is correlated with successful team member performance.

The 15-item Jackson *et al.* (2006) JPCM has been shown to be psychometrically sound. When Jackson *et al.* developed their facets they not only based them on the Collectivism literature, but subsequently tested and supported their five factor model using Confirmatory Factor Analysis (CFA).

Key Facets of the Collectivism Construct	
Preference	Collectivists emphasize relationships with in-group members and prefer to exist within the bounds of the in-group. They are affiliative by nature and believe that collective efforts are superior to individual ones.
Reliance	Collectivists believe that one person's responsibility is the responsibility of the entire in-group. This sense of collective responsibility makes them comfortable relying on other members of the in-group.
Concern	Collectivists are motivated not by self-interest but by a concern for the well-being of the in-group and its members
Norm acceptance	Collectivists focus on the norms and rules of the in-group and comply with those norms and rules in order to foster harmony within the collective.
Goal priority	Collectivists' actions are guided by the consideration of the in-group's interests. Thus in-group goals take priority over individual goals, even if this causes the in-group member to make certain sacrifices.
Adapted from Jackson <i>et al.</i> (2006)	

"Think about the work groups to which you currently belong, and have belonged to in the past. The items below ask about your relationship with, and thoughts about, *those particular groups*. Respond to the following questions, as honestly as possible, using the response scales provided. (1 _ Strongly Disagree to 5 _ Strongly Agree)."

<i>Psychological Collectivism Measure Items</i>						
Facet	Measure item	1	2	3	4	5
Preference	1. I preferred to work in those groups rather than working alone.					
Preference	2. Working in those groups was better than working alone.					
Preference	3. I wanted to work with those groups as opposed to working alone.					
Reliance	4. I felt comfortable counting on group members to do their part.					
Reliance	5. I was not bothered by the need to rely on group members.					
Reliance	6. I felt comfortable trusting group members to handle their tasks.					
Concern	7. The health of those groups was important to me.					
Concern	8. I cared about the well-being of those groups.					
Concern	9. I was concerned about the needs of those groups.					
Norm acceptance	10. I followed the norms of those groups.					
Norm acceptance	11. I followed the procedures used by those groups.					
Norm acceptance	12. I accepted the rules of those groups.					
Goal priority	13. I cared more about the goals of those groups than my own goals.					
Goal priority	14. I emphasized the goals of those groups more than my individual goals.					
Goal priority	15. Group goals were more important to me than my personal goals.					
Adapted from Jackson et al. (2006)						

Translation

Questionário Jackson						
		Discordo Completamente 1	2	3	4	Concordo Completamente 5
P	1. Eu prefiro trabalhar neste grupo que sozinha.					
P	2. Trabalhar neste grupo é melhor que trabalhar sozinha.					
P	3. Eu queria trabalhar neste grupo em oposição a trabalhar sozinha.					
R	4. Senti-me confortável em contar com os membros do grupo e fazer parte deles.					
R	5. Não me incomoda a necessidade de contar com os membros do grupo.					
R	6. Senti que podia confiar que os membros do grupo realizassem as suas tarefas.					
C	7. A saúde e o espírito deste grupo são importantes para mim.					
C	8. Eu importo-me com o bem-estar deste grupo.					
C	9. Eu estava preocupada com as necessidades deste grupo.					
N	10. Eu respeito as normas deste grupo.					
N	11. Eu sigo os procedimentos usados neste grupo.					
N	12. Eu aceito as regras deste grupo.					
G	13. Eu interesse-me mais pelos objectivos deste grupo do que pelos meus.					
G	14. Eu privilegio mais os objectivos deste grupo que os meus próprios objectivos.					
G	15. Os objectivos de grupo são mais importantes para mim que os meus objectivos pessoais.					
Adapted from Jackson et al. (2006)						

Appendix E - Goal-setting in Sport Questionnaire

The Goal-setting in Sport Questionnaire (GSISQ; Weinberg, 1997) was utilized to better understand the athletes' goal-setting practices and strategies.

The 57-item GSISQ provides insight into how often athletes set various goals and how effective the goals are for improving performance. Specifically, 52 of the questions are answered on a 9-point Likert scale (i.e., 1=not often at all, 9=very often). Of these 52 questions, 25 relate to goal frequency, 24 relate to goal effectiveness, and 3 relate to goal commitment and effort. The remaining 5 include 2 rank ordered and 3 open-ended questions that request the respondent to indicate their goal-setting preferences. Burton *et al* (1998) conducted separate factor analyses on the frequency and effectiveness scales which produced virtually identical factors for each (i.e., Process-related goals, Product-related goals, and Goal implementation strategy).

SECTION A: BACKGROUND INFORMATION

Gender: M F

Age: _____ Year in Team: _____

How Many Seasons Have You Done Some Type Of Goal-setting? _____

Years Experience In Current Sport _____

Are You A Starter Or In The Line up To Compete Regularly? YES NO

What Percentage Of The Time Do You Play/Compete? _____

Rate your athletic ability compared to the best athletes you regularly compete against

1	2	3	4	5	6	7	8	9
Lot Lower		Somewhat Lower		About the Same		Somewhat Higher		Lot Higher

SECTION B: FREQUENCY OF GOAL-SETTING STRATEGY USAGE

	Not often at all		Some times				Very often		
	1	2	3	4	5	6	7	8	9
1. How often have you used goal-setting to help improve your sport performance?									
2. How often have you set long-term goals (i.e., three or more months into the future)									

to improve your sport performance?										
3. How often have you set short-term goals (e.g., daily, weekly, monthly) to improve your sport performance?										
4. How often have you set goals for what you want to accomplish in practice?										
5. How often have you set goals for what you want to accomplish in competition?										
6. How often have you set team goals?										
7. How often have you set goals that focus on improving specific sport skills or techniques?										
8. How often have set goals that focus on improving specific sport strategies?										
9. How often have set goals that focus on improving your physical conditioning (e.g., speed, strength, endurance)?										
10. How often have set goals that focus on improving specific psychological skills (e.g., confidence, concentration, mental toughness)?										
11. How often have set goals that focus primarily on outcome (e.g., winning a competition, your won /loss record)?										
12. How often have set goals that focus primarily on your overall performance?										
13. How often do you set goals primarily to develop or maintain positive motivation?										
14. How often do you set goals primarily to develop or maintain your self confidence?										
15. How often in competition are your outcome goals (e.g., winning) more important than process or performance goals that focus on reaching personal standards of excellence?										
16. How often do you set goals for what you want to accomplish outside of sport?		Not often at all				Some times				Very often
17. How often have you set long-term sport goals that were too easy and failed to challenge you to perform your best?	1	2	3	4	5	6	7	8	9	
18. How often have you set long-term sport goals that were too difficult so that they caused you to feel worried or stressed about reaching them?										

19. How often have you set short-term sport goals that were too easy and failed to challenge you to perform your best?									
20. How often have you set long-term sport goals that were too difficult so that they caused you to feel worried or stressed about reaching them?									
21. How often do you evaluate the effectiveness of the goals you set for yourself?									
22. How often have attractive rewards increased your commitment to achieve your goals?									
23. How often have you written down your goals?									
24. How often have you publicly disclosed (e.g., shared or posted) your goals?									
25. How often have you developed specific plans to help you achieve your goals?									

SECTION C: EFFECTIVENESS OF GOAL-SETTING STRATEGIES

	Not effective at all							Very effective		
	1	2	3	4	5	6	7	8	9	
1. How effective has goal-setting been in helping you to develop as an athlete?										
2. How effective have your long-term goals been in helping you develop as an athlete?										
3. How effective have your short-term goals been in helping you develop as an athlete?										
4. How effective have your practice goals been in develop as an athlete?										
5. How effective have your competitive goals been in helping you perform well and develop as an athlete?										
	Not effective at all							Very effective		
6. How effective have your team goals been in helping improve team performance?	1	2	3	4	5	6	7	8	9	

23. How effective has publicly disclosing your goals been in helping you develop as an athlete?									
24. How effective has developing a plan for how to achieve your goals been in helping you develop as an athlete?									

SECTION D: GOAL COMMITMENT & EFFORT									
	Not at all							Very much	
	1	2	3	4	5	6	7	8	9
1. How much has your commitment to a specific goal affected your ability to successfully reach that goal?									
2. In general, how much effort do you put forth when you are able to achieve your goals very easily?									
3. In general, how much effort do you put forth when you have only a small chance of achieving your goal even if you perform your best?									

SECTION E: GOAL-SETTING PREFERENCES & OPTIONS

1. How would you prioritize the following types of goals in terms of their importance to you? (Rank from **1=most important** to **8=least important**)

- _____ (a) winning
- _____ (b) improving overall performance
- _____ (c) improving skills and techniques
- _____ (d) improving sport strategies
- _____ (e) improving conditioning
- _____ (f) improving psychological skills
- _____ (g) social/affiliation
- _____ (f) fun/enjoyment

1. How would you prioritize your preferred level of difficulty for the goals you set? (Rank from **1=most preferred** to **5=least preferred**)

- _____ (a) easy goals that require minimal effort to achieve
- _____ (b) moderately easy goals that are slightly below the level that you think you can perform at.
- _____ (c) moderate goals that are equal to the level at which you think you can perform with your best effort.
- _____ (d) moderately difficult goals that are somewhat above the level at which you think you can perform.

_____ (e) very difficult goals that are substantially above the level at which you think you can perform.

2. List two examples of current long-term goals and two examples of current short-term goals.

3. When setting performance goals (i.e., goals for improving your own performance), how do you decide how difficult to make your goals?

4. How do you feel when you fail to achieve a goal? How do you respond to these feelings?

Translation**Goal-setting in Sport Questionnaire****Secção A: Informação Geral**

Sexo: M F Idade: _____ Anos na Equipa: _____

Há quantos anos é que efectua algum tipo de definição de objectivos? _____

Há quantos anos joga andebol _____

Joga na frequentemente na equipa inicial? Sim Não

Quantos minutos joga por jogo? _____

Avalie a sua capacidade andebolista comparativamente com as melhores atletas das equipas adversárias

1	2	3	4	5	6	7	8	9
Muito Abaixo		Um pouco Abaixo		Igua l		Um pouco Acima		Muito Acima

Secção B: Frequência na utilização estratégica de definição de objectivos

	Poucas Vezes						Algumas Vezes		Muitas Vezes	
	1	2	3	4	5	6	7	8	9	
1. Com que frequência tem utilizado a definição de objectivos para melhorar o seu jogo?										
2. Com que frequência definiu objectivos de longo prazo (a mais de 3 ou 4 meses de distância) para melhorar o seu jogo?										
3. Com que frequência definiu objectivos de curto prazo para melhorar o seu jogo?										
4. Com que frequência definiu objectivos para aquilo que pretende fazer durante o treino?										
	Poucas Vezes						Algumas Vezes		Muitas Vezes	

5. Com que frequência definiu objectivos para aquilo que pretende fazer durante um jogo oficial?	1	2	3	4	5	6	7	8	9
6. Com que frequência definiu objectivos de equipa?									
7. Com que frequência definiu objectivos que se focam na melhoria específica de habilidades ou técnicas do andebol?									
8. Com que frequência definiu objectivos que se focam na melhoria específica da capacidade táctica?									
9. Com que frequência definiu objectivos que se focam na melhoria da capacidade física (velocidade, força, resistência)?									
10. Com que frequência definiu objectivos que se focam na melhoria específica da capacidade psicológica (confiança, concentração, resistência mental)?									
11. Com que frequência definiu objectivos que se focam principalmente em resultados (vencer, percentagem de vitórias, etc.)?									
12. Com que frequência definiu objectivos que se focam principalmente no seu desempenho geral?									
	Poucas Vezes				Algumas Vezes				Muitas Vezes
13. Com que frequência define objectivos que se focam principalmente em desenvolver ou manter uma motivação positiva?	1	2	3	4	5	6	7	8	9
14. Com que frequência define objectivos que se focam principalmente em desenvolver ou manter a sua auto-confiança?									
15. Com que frequência durante o jogo o seu objectivo de resultado (ex. vitória) é mais importante do que os objectivos que demonstrem um elevado desempenho individual?									
16. Com que frequência define objectivos para a sua actividade fora do andebol?									
	Poucas Vezes				Algumas Vezes				Muitas Vezes
17. Com que frequência definiu objectivos desportivos de longo prazo que são	1	2	3	4	5	6	7	8	9

demasiado fáceis e pouco desafiantes para poder desenvolver toda a sua capacidade desportiva?										
18. Com que frequência definiu objectivos desportivos de longo prazo que são tão difíceis que fica preocupada e em stress acerca da possibilidade de os alcançar?										
19. Com que frequência definiu objectivos desportivos de curto prazo que são demasiado fáceis e pouco desafiantes para poder desenvolver toda a sua capacidade desportiva?										
20. Com que frequência definiu objectivos desportivos de curto prazo que são tão difíceis que fica preocupada e em stress acerca da possibilidade de os alcançar?										
21. Com que frequência avalia o cumprimento dos objectivos que definiu para si?										
22. Com que frequência ter boas recompensas fez melhorar o seu empenhamento no cumprimento dos objectivos?										
23. Com que frequência escreveu os seus objectivos?										
24. Com que frequência partilhou com pessoas ou a equipa os seus objectivos?										
25. Com que frequência desenvolveu planos específicos que a ajudam a cumprir os seus objectivos?										

Secção C: Efectividade na estratégia de definição de objectivos

	Não Eficaz							Muito Eficaz	
	1	2	3	4	5	6	7	8	9
1. Até que ponto tem sido eficaz a definição de objectivos no seu desenvolvimento como atleta?									
2. Até que ponto tem sido eficaz a definição de objectivo de longo prazo no seu desenvolvimento como atleta?									
3. Até que ponto tem sido eficaz a definição de objectivo de curto prazo no seu desenvolvimento como atleta?									

4. Até que ponto têm sido eficazes os seus objectivos de treino no desenvolvimento como atleta?										
5. Até que ponto têm sido eficazes os seus objectivos competitivos (jogo) no desenvolvimento da melhoria do seu jogo e como atleta?										
6. Até que ponto têm sido eficazes os objectivos da equipa no desenvolvimento dos resultados da equipa?										
	Não Eficaz							Muito Eficaz		
7. Até que ponto têm sido eficazes os seus objectivos de melhoria de capacidades e técnica no desenvolvimento como atleta?	1	2	3	4	5	6	7	8	9	
8. Até que ponto têm sido eficazes os seus objectivos de melhoria táctica no desenvolvimento como atleta?										
9. Até que ponto têm sido eficazes os seus objectivos de melhoria da condição física (velocidade, força, resistência) no desenvolvimento como atleta?										
10. Até que ponto têm sido eficazes os seus objectivos de melhoria psicológica (confiança, concentração, atitude, força mental) no desenvolvimento como atleta?										
11. Até que ponto têm sido eficazes os seus objectivos de resultado (vitórias, percentagem de vitórias) na melhoria do seu jogo?										
12. Até que ponto tem sido eficaz a definir objectivos que se focalizam na melhoria da excelência pessoal?										
13. Até que ponto tem sido eficaz a definição de objectivos na manutenção e desenvolvimento da motivação positiva?										
	Não Eficaz							Muito Eficaz		
14. Até que ponto tem sido eficaz a definição de objectivos na manutenção e desenvolvimento da auto-confiança?	1	2	3	4	5	6	7	8	9	
15. Até que ponto tem sido eficaz a definição de objectivos não desportivos na melhoria da sua qualidade de vida?										
16. Até que ponto foram eficazes os objectivos desportivos fáceis de longo prazo na melhoria do seu jogo?										

17. Até que ponto foram eficazes os objectivos desportivos difíceis de longo prazo na melhoria do seu jogo?									
18. Até que ponto foram eficazes os objectivos desportivos fáceis de longo prazo a ajudá-la a ser melhor atleta?									
19. Até que ponto foram eficazes os objectivos desportivos difíceis de longo prazo a ajudá-la a ser melhor atleta?									
20. Até que ponto tem sido eficaz a avaliação periódica dos seus objectivos desportivos a ajudá-la a ser melhor atleta?									
21. Até que ponto são eficazes as recompensas para aumentar o seu empenhamento em alcançar os objectivos?									
22. Até que ponto tem sido eficaz escrever os seus objectivos de forma a ajudá-la a evoluir como atleta?									
23. Até que ponto tem sido eficaz divulgar publicamente os seus objectivos de forma a ajudá-la a evoluir como atleta?									
24. Até que ponto tem sido eficaz desenvolver um plano para atingir os seus objectivos de forma a ajudá-la a evoluir como atleta?									

Secção D: Empenhamento e Esforço em relação aos Objectivos

	Nenhum							Muito	
	1	2	3	4	5	6	7	8	9
1. Até que ponto é que o seu empenhamento num objectivo específico contribuiu para a sua capacidade de atingi-lo?									
2. Em geral, qual é o grau de esforço dispendido quando tem facilidade em atingir um objectivo?									
3. Em geral, qual é o grau de esforço dispendido quando, mesmo jogando muito bem, tem poucas possibilidades de alcançar o objectivo?									

Secção E: Preferências e Opções na definição de Objectivos

1. Como é que prioriza os seguintes objectivos em termos de importância para si? (1 mais importante até 8 menos importante)

_____ (a) vencer

_____ (b) melhorar o desempenho geral

- _____ (c) melhorar capacidades e técnicas
- _____ (d) melhorar a tática desportiva
- _____ (e) melhorar a condição física
- _____ (f) melhorar a condição psicológica
- _____ (g) social/ pertença
- _____ (f) divertir-se/sensação gratificante

2. Como é que prioriza o nível de dificuldade preferido dos objectivos que define para si? **(1 mais preferido até 5 menos preferido)**

- _____ (a) Objectivos fáceis que requerem pouco esforço para os alcançar
- _____ (b) Objectivos moderadamente fáceis que estão um pouco abaixo do nível que pensa conseguir alcançar.
- _____ (c) Objectivos moderados que estão ao nível que pensa que poderá alcançar com o seu melhor esforço
- _____ (d) Objectivos moderadamente difíceis que estão um pouco acima do nível que pensa conseguir alcançar.
- _____ (e) Objectivos muito difíceis que estão muito acima do nível que pensa conseguir alcançar.

3. Indique 2 objectivos de longo prazo e 2 de curto prazo

4. Quando define objectivos de desempenho (objectivos para melhorar o seu jogo), como é que decide em relação à dificuldade dos mesmos?

5. Como é que se sente quando falha os objectivos? Como é que responde a esses sentimentos?

Secção F: Outros

1. O quê está a faltar para elevar o nível **de produtividade da equipa**? Enumere de 1 a 10 **(1 mais importante até 10 menos importante)**.

- _____ (a) Planeamento e Organização

- _____ (b) Trabalho Técnico
- _____ (c) Trabalho Tático
- _____ (d) Trabalho Físico
- _____ (e) Diálogo
- _____ (f) Espírito Colectivo
- _____ (g) Participação
- _____ (h) Motivação
- _____ (i) Novos Métodos de Trabalho
- _____ (j) Ambiente mais Agradável

2. Considera necessário **avaliar** o trabalho que está sendo realizado? **Sim Não**
3. A **metodologia** de trabalho pode influenciar o rendimento da equipa? **Sim Não**
4. Você está **satisfeito** com o seu desempenho? **Sim Não**
5. A equipa faz um **planeamento** periódico das acções a serem desenvolvidas? **Sim Não**

	Pouco Ambiciosos							Muito Ambiciosos	
6. Quanto aos objectivos da equipa:	1	2	3	4	5	6	7	8	9

Appendix F - Informed consent sheet

Purpose of Study

The utilisation of goal-setting and the use of ProMES system as a work tool to measure productivity will improve productivity in an Angolan female handball team (organisation).

Description of Study

As a participant in this study, you are a volunteer. It is your option to terminate your participation at any time without prejudice to you. In this investigation you are asked to complete three questionnaires. The approximate time for answering the questionnaires is forty-five minutes. However, you may take as long as you would like to answer the questionnaires.

Potential Risks and Discomforts

This study entails no physical risks or discomforts. No psychological discomfort is anticipated. The participants may stop at any time. The knowledge gained from this study may be beneficial to the athletes, coaches and sport consultants. The information gained about athletes' goal-setting strategies, task and ego-orientation and collectivism provide improved methods to motivate and train handball athletes. For example, coaches may gain insight into what actually motivates highly trained handball athletes and athletes may better recognize what motivates them to set goals and achieve goals.

The questionnaires will be secured in a file cabinet in the researcher office until completion of the research project. At that time the questionnaires will be destroyed.

The participant will not be identified on the questionnaire, and every precaution will be made to ensure confidentiality of records and identifying information.

I have read the statement above and understand my role in the research and potential risks involved. In addition I am aware that:

- (1) My name, questionnaire, and interview information will remain confidential.
- (2) I am entitled to have any further inquiries answered regarding the procedures.
- (3) I may withdraw my consent and discontinue my participation at any time without penalty or prejudice toward me.

Date: _____ Signature: _____

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Appendix G - ProMES Technical Questions

Source: TheProMESsenger, Professor Robert D. Pritchard. University of Central Florida.
<http://promes.cos.ucf.edu/index.php> February 2011

Q: What exactly is "effectiveness" in ProMes?

A: ProMES contingencies relate the amount of an indicator to how effective that level of the indicator is. It is an effectiveness measure in the sense that effectiveness is normally defined as output relative to a standard. The standard in ProMES is the minimum expected level of performance, i.e. the zero point on the contingency.

Effectiveness is defined as:

- The value to the broader organisation not just the work group. (This requires agreement between management and people doing the work.)
 - It is the value of the consequences of that level of output.
 - It includes both the positive and negative consequences of that level of output. It is not the difficulty in obtaining that level of output. Difficulty is frequently related to value, but not necessarily and not perfectly.
 - It is not necessarily what is currently defined as high or low performance, it is what should be defined as high or low performance for the organisation as a whole.
 - Contingencies and their effectiveness values define policy.
-

Q: Why are ProMes contingencies non-linear?

A: One of the key features in ProMES is the contingencies, especially the non-linearity of these contingencies. People have sometimes wondered why they are not linear.

The argument starts with the notion that an indicator can have a number of consequences that have value to the organisation. If we think, for example, of an indicator measuring how much output is produced by a machine, one obvious consequence would be the objects produced. However, other consequences also occur such as wear on the machine, use of materials, and opportunities for doing preventative maintenance on the machine.

Different levels of output of the machine produce different levels of the consequences. These different levels of the consequences have different values to the organisation. Producing 10

objects is usually better than producing 5, less wear on the machine is better than more wear, etc.

Thus, producing 10 objects has a given level of direct value to the organisation based on what revenue or profit they can earn from the 10 objects. However, there is also a series of costs to making the 10 objects that the group has some control over such as wear on the machine. In most situations, wear at low levels of output is probably a fairly linear function of amount produced, but wear at high levels of output is probably a positively accelerating curve. Thus, at high levels of output, wear (a negative consequence) increases at a faster and faster rate. Another consequence, preventative maintenance must be done to the machine and there is no problem doing such maintenance unless the machine is being used to near capacity. At near capacity, there is no time to do this maintenance. Not doing the maintenance on schedule has a high cost in terms of the long-term production from the machine.

Thus, there are three consequences in this example: objects produced, wear, and preventative maintenance. Variation in each produces variation in value to the organisation. The value of objects produced may be totally linear where more units produce more value, wear (expressed as units produced) produces costs (negative consequences) which get proportionally greater with higher production, and opportunities for preventative maintenance (also expressed as units produced) is a flat line until very high levels of production, then it shows a sharp drop (increase in negative consequences) because there is a strong negative consequence of the maintenance is not done.

ProMES contingencies reflect the sum of all the consequences that follow from different levels of output on the indicator. The overall value to the organisation (ProMES Effectiveness) of each level of the indicator is the sum of the values of the resulting consequences. In this example, the total value to the organisation of 15 objects produced is the value of the 15 objects, the costs of wear on the machine for making 15 units, and the opportunities for preventative maintenance when 15 units are done on a regular basis. Different amounts of units produced produce different sums. A plot of the sums of these consequences would be the contingency. This example would produce a non-linear contingency which was fairly steep and linear at the lower levels of output but gets progressively less steep at higher and higher levels of output.

The basic idea is that when multiple consequences are present, the chances are great that non-linearities occur. I suspect that for most indicators, multiple consequences are the rule, which helps explain why most contingencies turn out to be non-linear.

Another thing to remember is that you can make some of the consequences a separate indicator if you wish. For example, in the case above you could directly measure whether preventative maintenance is done on schedule as a separate indicator. If you did this, the shape of the contingency for number of units produced should change. It would not show as much of a relative drop in effectiveness near the top levels of output because the negative consequence of not doing preventative maintenance is omitted from that contingency.

In such a situation where you had a separate contingency for maintenance, high levels of output that result in not doing preventative maintenance would get a higher positive effectiveness score, but there would be a negative effectiveness score in the feedback report from not having done the maintenance. The ProMES Overall Effectiveness Score would reflect both.

Q: Is there a difference between the shape of the contingency and the confidence one has in that shape? Put another way In doing contingencies one can think about the shape of the function and independently consider the confidence a person or group has in the accuracy of their perceptions about that shape. Is this an issue that must be considered in ProMES?

A: My answer to that comes directly from the Naylor, Pritchard, Ilgen (1980) theory from which ProMES is based. Our feeling when we did NPI theory was that there were several mechanisms that produced contingencies. One was someone simply telling you what the relationship was. A second was modeling where through observation of what happened to others, you formed an impression of the contingency. The third was what actually happened to you. These three mechanisms operate for all the types of contingencies, including the result-to-evaluation contingencies that are used in ProMES.

The first mechanism can be someone telling you the overall shape of the contingency (e.g. Someone telling you on a new job that you need to wear a tie but as long as your clothes are clean and you don't wear jeans, you don't need to dress any better than that). This is a statement of the relationship between how you dress and how you are evaluated. However, the second and third mechanisms as well as some instances of the first one do not deal with the shape of the entire relationship, but are specific events that pair one level of one variable with one level of the other. For example, suppose you wear jeans to work and your supervisor tells you "don't wear jeans". This shows that one level of dress (wearing jeans) is paired with one level of evaluation (negative). Only through a series of trials do you determine the overall relationship between level of dress and how you are evaluated. Another example is where you

do a piece of work and someone tells you that is really good work. You may know that in the future that level of work is considered good, but do not have a sense of how other levels of work are evaluated. By a series of these pairings, you build up the perceptions of the contingencies. This pairing can be evaluations that are made on you or evaluations made on others that you are aware of.

Thus, one can think about a contingency as a bi-variate distribution of events, essentially a scatter plot in correlational terms. The non-linear function going through the points is the contingency.

However, this still leaves the issue of how much confidence one has in the contingency function. That is, is it different to have a situation where the contingency is high and the people are sure of it vs. a situation where they think it is high and they are not sure of it? In terms of the bi-variate distribution, this translates into how close the various points are to the best fitting non-linear function going through those points?

The partial answer I have is that you cannot have both steep contingencies and lots of error around each point. In correlational terms, lots of deviation around the regression line means that by definition the slope of that line is shallow. Thus any lack of confidence (what would be considered as error in correlational terms) serves to reduce the slope and make a weaker contingency.

The reason this answer is only a partial one is because it does not take care of the situation where the contingency is seen as low and there is little confidence that that judgment is correct. In other words, does it mean the same if I know it is not important (shallow slope) vs. the case where I simply don't know and thus do a flat slope?

In theory these are two different situations. However, in practice, I don't think it is much of an issue. If the design team does not know what the contingency should be and no one else does either (e.g. other group members or management), it should be either dropped or the organisation should investigate whether it is important.

This brings up yet another issue. Specifically, does the above discussion imply that when people have limited control on an indicator, that indicator could never be of high importance, i.e. have a steep contingency? If people have limited control over the indicator, this is not directly a product-to-evaluation issue in NPI terms. Not having control is an act-to-product contingency issue. If I do not have control over how much of the indicator I can produce, it means that there is not a strong relationship between how much effort I put into the acts used to produce that result (product) and how much of it I actually produce. Low act-to-product

contingencies will reduce motivation and should be increased as much as possible by using measures that people do have control over.

However, act-to-product contingencies and product-to-evaluation contingencies are largely independent in the sense that both can be high, both can be low, or one high and the other low. If I know there are big differences in how different levels of the indicator are evaluated and I know what these differences are, this is a steep ProMES contingency (NPI product-to-evaluation contingency). I may know this, but not have much control over how much of the indicator I can produce. This is a low act-to-product contingency. Thus, to finally answer the question posed in the previous paragraph, it is quite possible to have high importance on an indicator that people have only limited control over.

Q: What are the criteria for ProMES objectives and indicators?

A: (It is frequently a good idea to give this list to members of the design team)

Objectives should meet the following criteria:

They should be stated in clear terms.

If exactly that objective was done, the organisation would benefit. The set of objectives must cover all important aspects of the work. The objectives must be consistent with the objectives of the broader organisation. Higher management must be committed to each objective. Keep the number of objectives manageable, normally three to five.

Indicators should meet the following criteria:

Indicators must be consistent with the objectives of the broader organisation. If the indicator was maximized, the organisation would benefit. Indicators must validly measure the objective.

All important aspects of each objective must be covered by the set of indicators. Higher management must be committed to all the indicators. Indicators must be largely under the control of unit personnel. Indicators must be understandable and meaningful to unit personnel. It must be possible to provide information on the indicator in a timely manner.

Accurate indicator data must be cost effective to collect. The information provided by the indicator must neither be too general nor too specific. It is important to keep the indicators to a manageable number, usually no more than 12.

Q: What are the important things to do before the design team starts its work in a ProMES project?

A: It is easy to forget some of the steps that need to be done before starting a ProMES project. This is a checklist of things that should ideally be done.

Project Approval

The project must be formally approved at the highest level possible. All interested constituencies such as management personnel, other units, worker's organisations, etc. have been involved in deciding to do the project. Benefits and costs have been clearly explained to all.

Assessments of Initial Attitudes Facilitators have assessed:

The degree of trust between unit members and management.

Whether unit members and management agree on what the objectives are for that unit.

Whether all see productivity improvement as valuable.

Whether all see improvement as requiring considerable effort and time.

Whether all see participation/acceptance as essential.

Whether there are any planned changes in technology for the target unit.

Whether there are any planned changes in the organisation of the unit.

Whether there are any planned changes in unit personnel.

Degree of Management Support You should get the following commitments:

Management should agree to provide public support throughout project until a final evaluation can be made.

Management should agree to provide resources for development and implementation (time, access to data, etc.)

Management should agree that the measurement system developed through ProMES will become the new way that unit is evaluated by management. That is, ProMES should not simply be seen as an experiment that goes with the existing way the unit is evaluated, it should replace the existing evaluation system.

Management should formally deal with certain issues that will come up in the project. These issues include potential job loss if productivity improves, unit member compensation if productivity improves, whether ProMES performance will be tied to pay, and how will the ProMES project be expanded if successful.

Supervision and Unit Members

1. The process of ProMES must be carefully explained, including potential advantages and costs.
2. The reasons why they were chosen must be explained.
3. Ideally, they have volunteered to try ProMES.
4. If the design team is a subset of the entire unit, the issues of with how whole group will be involved in the process must be decided by the supervisors and unit members before the design team starts its work.

Appendix H – GSISQ Other Data

GSISQ Other Data

Goals Ambition (from not at all ambitious 1 to very much ambitious 9)

	Mean	Standard Deviation	Maximum	Minimum	Median
1 Ambition	7.94	1.20	9.00	5.00	8.00

The means and standard deviations of the team ambitious shows the female Angolan handball players from this team had a strong belief about the goal-setting propose by the coach or club is very much ambitious.

Long-term goals

Win Angola National Championship	9	40,91%
To be member of National Team	3	13,64%
Winning the African Champion Cup of Clubs	2	9,09%
To participate in the Olympics	2	9,09%
Improving Individual Technical and Tactical skills	2	9,09%
Good performance during the season	1	4,55%
To be member of the line up	1	4,55%
To make a Family	1	4,55%
Staying in the team	1	4,55%
	22	100,00%

Short-term goals

Win Provincial Championship	5	27,78%
Improving individual technical and tactical skills	4	22,22%

Improving the psychological factor	2	11,11%
To play	3	16,67%
Improving Engagement	2	11,11%
Scoring 8 goals / game	1	5,56%
Improving defense skills	1	5,56%
	18	1

When setting performance goals (i.e., goals for improving your own performance), **how do you decide how difficult to make your goals?**

Difficulty in making the task	3	60,00%
The most difficult to easiest	1	20,00%
Effort to develop	1	20,00%
	5	1

How do you feel when you fail to achieve a goal?

Unmotivated	3	21,43%
I feel bad	3	21,43%
Very bad	2	14,29%
Very sad	2	14,29%
Sad	1	7,14%
I go into stress	1	7,14%
Rubbish	1	7,14%
Upset	1	7,14%
	14	1

How do you respond to these feelings?

Do not desmoralize	1	33,33%
More work	1	33,33%
Try again	1	33,33%
	3	1

What is missing? (from 1 = most important to 10 = least important)

Ranking	What is missing	Mean	Standard Deviation	Maximum	Minimum	Median	Σ
1	6 Team Spirit	2.18	1.67	6	1	1	37
2	5 Dialogue	3.65	2.23	8	1	3	62
3	2 Technical Working	3.88	2.50	8	1	4	66
4	3 Tactical Work	3.94	2.54	9	1	4	67
5	7 Participation	4.00	2.47	8	1	3	68
6	8 Motivation	4.24	2.99	10	1	3	72
7	1 Planning and Organization	4.53	3.20	9	1	4	77
8	4 Physical Work	5.29	3.18	10	1	5	90
9	9 New working methods	6.41	3.71	10	1	9	109
10	10 Better Environment	6.65	3.76	10	1	9	113

The means and standard deviations of the rankings of “what is missing” shows the female Angolan handball players from this team most of all believed the team spirit is not enough.

Appendix I – Correlations – Kendall’s tau test

		Task Score	Ego Score	Preference	Reliance	Concern	Norm Acceptance	Goal Priority	Goal Frequency	Goal Effectiveness	Commitment and Effort	Team Goals Difficulty
Task Score	Correlation Coefficient Sig. (1-tailed)	1										
Ego Score	Correlation Coefficient Sig. (1-tailed)	,214 ,128	1									
Preference	Correlation Coefficient Sig. (1-tailed)	-,133 ,254	-,174 ,190	1								
Reliance	Correlation Coefficient Sig. (1-tailed)	,182 ,174	-,130 ,249	,444 ,015	1							
Concern	Correlation Coefficient Sig. (1-tailed)	-,270 ,093	-,341 ,046	,454 ,017	,395 ,029	1						
Norm Acceptance	Correlation Coefficient Sig. (1-tailed)	-,393 ,031	-,445 ,016	,496 ,013	,219 ,153	,497 ,014	1					
Goal Priority	Correlation Coefficient Sig. (1-tailed)	-,180 ,175	-,290 ,064	,108 ,297	,109 ,289	,225 ,137	,157 ,230	1				
Goal Frequency	Correlation Coefficient Sig. (1-tailed)	,085 ,323	,099 ,295	-,085 ,332	-,087 ,322	-,351 ,038	-,148 ,233	,000 ,500	1			
Goal Effectiveness	Correlation Coefficient Sig. (1-tailed)	,162 ,190	-,099 ,295	,356 ,034	,071 ,352	,074 ,354	,057 ,390	,063 ,368	,444 ,007	1		
Commitment and Effort	Correlation Coefficient Sig. (1-tailed)	,289 ,068	-,024 ,449	,063 ,378	,203 ,151	-,020 ,462	-,110 ,304	,109 ,288	,531 ,002	,578 ,001	1	
Team Goals Difficulty	Correlation Coefficient Sig. (1-tailed)	,193 ,173	,208 ,151	-,053 ,403	,158 ,223	,103 ,318	-,170 ,225	-,010 ,481	-,388 ,025	-,341 ,042	-,415 ,023	1

