

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

4,800

Open access books available

122,000

International authors and editors

135M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.

For more information visit www.intechopen.com



A Conceptual Framework for the Inclusion of Recreational Therapy within South African Healthcare Paradigms

Terry Jeremy Ellapen, Mariette Swanepoel,
Marco Barnard and Yvonne Paul

Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/intechopen.91160>

Abstract

Final-phase rehabilitation in South Africa is synonymous with the professions of Physiotherapy and Biokinetics; no consideration is given to the contribution of the profession of Recreational Therapy, which successfully contributes to other international healthcare paradigms. The primary aim was to determine whether collaborative relationships exist between South African recreational therapists and physiotherapists or biokineticists. A secondary aim was to review the potential inclusion of the profession of Recreational Therapy within the existing South African patient referral system of the multidisciplinary healthcare paradigm. An electronic search of the Google Scholar and Sabinet databases identified no records regarding interprofessional collaborative relationships between Recreational Therapy, Physiotherapy and Biokinetics. The authors therefore used two indirect records that prescribe interprofessional collaboration among South African healthcare practitioners during final-phase exercise rehabilitation. The quality of these individual records was appraised using the modified Downs and Black Scale in order to reduce bias. While there is a paucity of literature identifying the absence of interprofessional collaborative relationships between Recreational Therapy, Biokinetics, and Physiotherapy, the Health Professions Council of South Africa (HPCSA) guide nevertheless allows for dynamic overlap among final-phase exercise therapists, thereby providing an opportunity for the inclusion of Recreational Therapy within the existing dynamic, multidisciplinary, South African healthcare paradigm. The inclusion of the profession of Recreational Therapy, as part of a collaborative team effort, can be helpful in order to address the multifaceted challenges experienced by many South African patients.

Keywords: biokinetics, interprofessional collaboration, physiotherapy, recreational therapy

1. Introduction

While final-phase exercise rehabilitation in South Africa is synonymous with the professions of Physiotherapy and Biokinetics [1], Recreational Therapy is another South African therapeutic profession which offers a noteworthy contribution to final-phase rehabilitation [2]. Clinical exercise rehabilitation regimes commonly adopted by Physiotherapy and Biokinetics are monotonous, resulting in poor patient rehabilitation compliance [3]. Strydom et al. [3] reported that many patients prefer fun and exciting games and playful physical activities to tedious clinically prescribed rehabilitation programmes. The inclusion of structured, fun, games and physical activities ameliorates rehabilitation compliance, thereby leading to greater rehabilitative success [3]. Playful physical activity, games, and exercises all help to develop patients' physical, cognitive, and motor skills, having a further beneficial effect on their psychosocial development [4]. Mlenzana and Frantz [5] contend that South Africa requires a multidisciplinary healthcare rehabilitation team in order to address the health and physical needs of patients who require both clinical, and non-clinical, rehabilitation.

The dynamic interaction of the profession of Recreational Therapy within the existing South African healthcare paradigm has been marginalised [6, 7]. Recreational Therapy has not been included in the South African Healthcare paradigm, and this has a detrimental effect on cross-referrals for recreational therapy [6]. Furthermore, Recreational Therapy is not acknowledged by the South African national legislative health bodies; being neither acknowledged by the Allied Health Professions Council of South Africa (AHPCSA) nor by the Health Professions Council of South Africa (HPCSA) [2]. Internationally however, the profession of Recreational Therapy has been officially recognised as a significant independent profession, contributing to the well-being of patients through their successfully rehabilitation [8]. The North Carolina Recreational Therapy Association reported that Recreational Therapy ameliorates both patients' physical conditioning (improving motor skills, joint range of motion, muscle strength, gait, and lowering blood pressure) and psychosocial development (improving mental awareness, and anxiety management skills, reducing social anxiety, depression and social isolation) [9].

In South Africa, the cross referral of patients is initiated with a visit to a general medical practitioner, who refers a patient to medical specialists or physiotherapists [6]. If surgery is warranted, the patient may undergo in-patient post-surgery physiotherapy, followed by out-patient physiotherapy, being referred to a biokineticist for final-phase functional rehabilitation [6]. The in-patient and out-patient physiotherapy is considered to form part of the acute and sub-acute (intermediate) phases of rehabilitation respectively [10].

Human health and well-being are influenced by numerous factors and the management thereof should therefore be multidisciplinary in nature [11]. Cooperative interaction within a *multidisciplinary healthcare rehabilitation team* (MDHRT) has been identified as the most effective strategy for the provision of superior healthcare [11, 12]. This ideal can only be achieved if the protagonists of the MDHRT recognise and respect each other's scope of profession (SoP), which, in turn, is reliant on their familiarity with each other's SoP [13, 14]. Pecukonis [15] and Wynn [16] underlined the need for improved multidisciplinary collaboration when

they reported that the era of professional healthcare centrism and/or individualism, which restricted interprofessional healthcare partnership and effective healthcare, has passed. This is similarly emphasised by Mlenzana and Frantz [5] who contend that the need for a multi-disciplinary South African healthcare exercise rehabilitation team to provide optimal patient healthcare is eminent.

The initial aim of this chapter is to determine whether a collaborative relationship among Recreational Therapy, Physiotherapy, and Biokinetics exists. A further aim was to identify the opportunities under which Recreational Therapy can make the most meaningful contribution to the South African rehabilitation healthcare paradigm.

2. Methodology

The methodology complied with the PRIMSA practises for drafting review articles, following its guidelines [17].

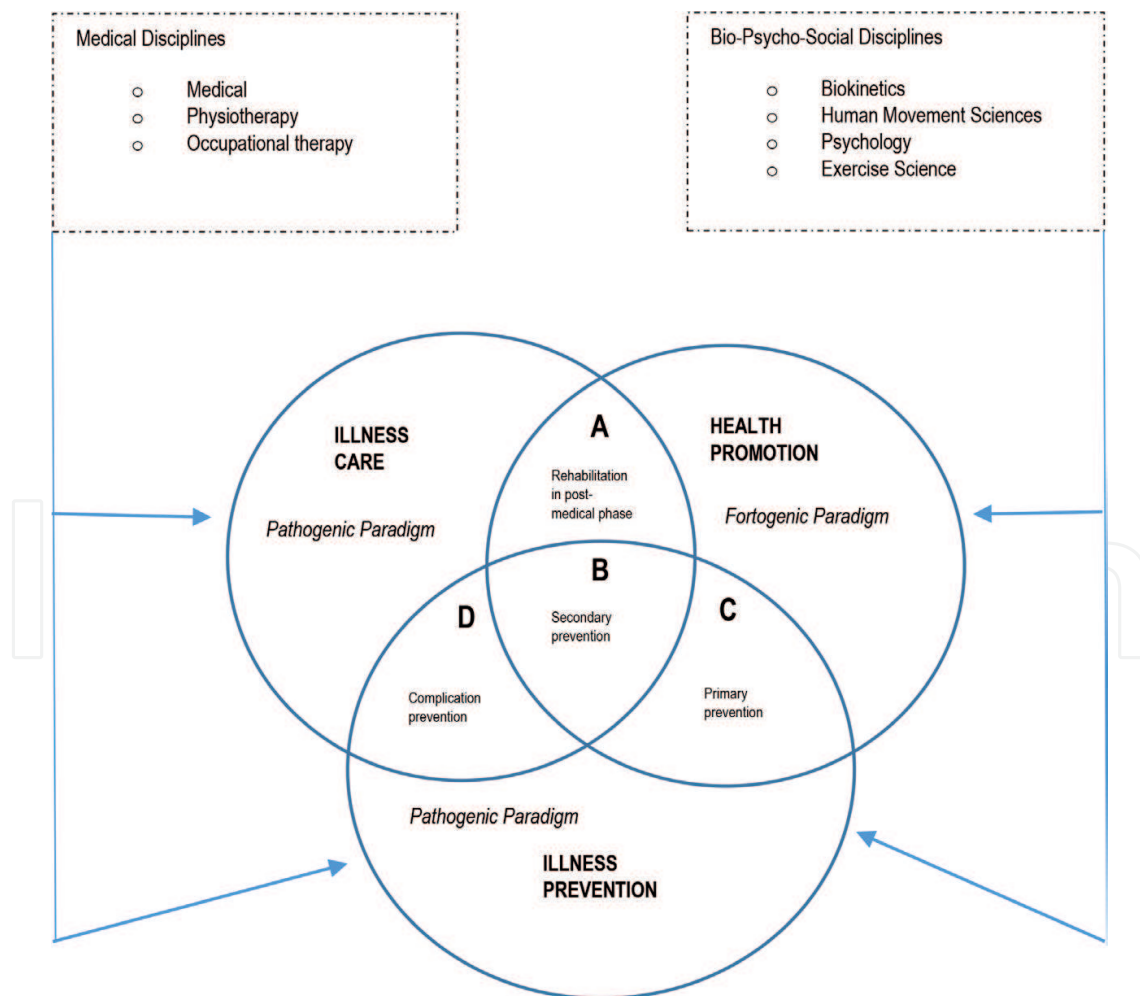


Figure 1. Articulation of the health dimensions in the health paradigms [3].

2.1 Literature surveillance

A literature exploration of professional, peer-reviewed, statutory records and grey literature was conducted using the Sabinet and Google Scholar search engines (**Figure 1**). Key search terms were: “physiotherapy,” “biokinetics,” “recreational therapy,” and “interprofessional collaboration.”

2.2 Admissibility criteria

The participants were records concerning interprofessional collaborations between the professions of Physiotherapy, Biokinetics, and Recreational Therapy. Themes of interest that emerged were proposals for interprofessional collaborations between recreational therapists and biokineticists, post final-phase physiotherapy, and the dynamics of interprofessional collaboration between recreational therapists and biokineticists within the South African rehabilitation health paradigm. The exclusion criteria employed were: collaborative relationships between biokineticists, physiotherapists, occupational therapists, physical educators, psychologists, and dieticians. Furthermore, non-English records were excluded. The screening eligibility of records was performed in the following steps: (i) title screen, (ii) abstract screen, (iii) exclusion of duplicate records, (iv) the application of the aforementioned exclusion criteria, and (v) full text screen.

3. Results

The Google Scholar and Sabinet search engines identified no records pertaining to collaborative relationships between recreational therapists, physiotherapists, and biokineticists. The literature surveillance was not limited to a specific time frame. The paucity of published research on this subject is indicative of the need for qualitative research to be undertaken in order to encourage and support interprofessional collaboration between physiotherapists, biokineticists, and recreational therapists. The researchers engaged with two indirectly related records in order to assist with the overarching discussion of the potential inclusion of Recreational Therapy within the South African final-phase rehabilitation healthcare paradigm post physiotherapy (**Table 1**). The quality of each record was appraised using the modified Downs and Black Appraisal Scale that examines both randomised controlled trials and non-randomised records [18]. The revised checklist comprised 13 questions. Each question was scored as either

Authors	Findings
Strydom et al. [3]	Provides insight into the articulation of the dimensions of health care and wellbeing that facilitate the expertise of Human Movement Science practitioners (biokineticists and recreational therapists) within the South African context.
Hall [6]	Outlines the holistic interaction of South African healthcare practitioners within a number of health dimensions and paradigms.

Table 1. Records adopted into this commentary (n = 2).

Authors	Reporting prowess (n = 5)	External validity (n = 3)	Internal validity (n = 4)	Power (n = 1)	Total (n = 13)	Grading % = $x/13 \times 100$
Strydom et al. [3]	4	0	1	0	5	38.46
Hall [6]	4	0	0	0	4	30.76

Table 2. Appraisal of records using the modified Downs and Black appraisal scale.

1 (yes) or 0 (no). The questions selected were 1, 2, 3, 6, 10, 11, 12, 13, 14, 18, 20, 23 and 27. The assessment reviewed the evidence reporting expertise (n = 5 questions), the internal validity (n = 4 questions), the external validity (n = 3 questions) as well as the power of significance (n = 1). Thereafter the summation of the scores was expressed as a percentage, reflective of the overall quality of the paper. These percentages were categorised into weak (<50%), fair (50–69%), good (70–79%) and very good (>80%) as per the grading system proposed by Downs and Black [18] (Table 2). The average percentage of all the records was 34.61%.

4. Discussion

The discussion relates to the review of the SoP of Physiotherapy, Biokinetics, and Recreational Therapy, which is followed by a description of the healthcare dimensions and paradigms. The article concludes with a discussion concerning the dynamic interaction of the aforementioned healthcare professions within the South African healthcare paradigms, specifically reviewing the inclusion of Recreational Therapy in the final-phase exercise therapy.

4.1 Scope of profession of physiotherapy

The profession of Physiotherapy was established in 1924 and is a longstanding provider of rehabilitation in South Africa [19, 20]. The SoP of Physiotherapy includes the treatment of diverse pathologies that include orthopaedic, neurological, respiratory and thoracic, cardiovascular, obstetric, paediatric, and geriatric, as well as providing treatment in terms of sports medicine, intensive care, and general rehabilitation [1]. Physiotherapy's SoP does not include recreational therapy.

4.2 Scope of profession of biokinetics

The profession of Biokinetics was officially gazetted in South African Healthcare legislature in 1983 [3, 21]. Biokinetic rehabilitation improves an individual's wellbeing and quality of life through personalised evaluation and therapeutic exercise prescription within the context of chronic clinical pathologies (the illness care and illness prevention health dimensions within the pathogenic paradigm) and performance advancement, which may include apparently healthy patients who aim to enhance or preserve their health by participating in habitual exercise, but who do not have any risk of pathology (the fortogenic paradigm) [21, 22]. Biokineticists manage children, pubescent, adolescent, adult and elderly patients during final-phase rehabilitation [1, 3].

4.3 Scope of profession of therapeutic recreation

Despite the lack of official recognition, professional bodies such as the *South African National Recreation Council (SANRC)*, *Recreation South Africa* and the *Leisure and Recreation Association of South Africa (LARASA)* [2] promulgate the practise of Therapeutic Recreational. *Recreation South Africa* was the initial professional body founded in 1994, whose primary objective was to perpetuate recreation and leisure fieldwork training. Subsequently, in 1998, the SANRC, whose fundamental purpose was campaigning for national recreational and leisure activity service delivery, was established [2]. Almost a decade later, in 2010, LARASA was established in order to promote Recreation as an independently recognised profession. The Leisure and Recreation Association of South Africa (LARASA) crusades against a physically inactive life-style by campaigning for leisure time physical activity [2]. Recreational Therapy makes use of both clinical and non-clinical components in order to facilitate the successful rehabilitation of patients (The Hull House) [8]. Recreational therapy involves a systematic process that prescribes recreation and other activity-based treatments to meet the therapeutic needs of patients with illnesses and/or disabilities, thereby facilitating their physical and psychological recovery and well-being [23]. The aim of Recreational Therapy is to improve or preserve the patient's physical, social, cognitive, emotional, and spiritual functioning so as to enhance the patient's quality of life [23]. Recreational Therapy includes therapeutic recreational activities such as arts and crafts, dance, drama, music, animal therapy, games, sports, and community outings [23]. Recreational therapists also treat the mental and emotional co-maladies of non-communicable diseases and musculoskeletal injuries by reducing depression, anxiety, and stress, while simultaneously increasing patient confidence [23].

4.3.1 Summary of the scope of profession of the aforementioned professions

Recreational therapists form part of the bio-psycho-social discipline and are amalgamated with dieticians, psychologists, and biokineticists [6] (**Figure 1**). Bio-psycho-social practitioners function within both the pathogenic and fortogenic health care paradigms [6]. Physiotherapists and occupational therapists function within the domain of the pathogenic healthcare paradigm and are considered to be primary healthcare practitioners (medical discipline) [10]. Maharaj [10] further reported that Physiotherapy is synonymous with acute and sub-acute treatment, whereas biokineticists are synonymous with final-phase or post medical rehabilitation. Recreational Therapy provides both physical and psychological rehabilitation through recreational activities and social engagement [8]. While psychological rehabilitation does not fall within the SoP of Physiotherapy and Biokinetics, it is a fundamental aspect that is needs to be addressed in order to ensure the successful re-integration of patients into work and society [1].

5. Healthcare dimensions and paradigms

Before studying the healthcare paradigms, it is crucial to appreciate the three healthcare dimensions, namely:

- i. Illness care, which occurs when pathology is apparent. The principal objective is to prescribe medical treatment to remedy the pathology [3],
- ii. Illness prevention, which is apparent when the patient is pathology-free but is at an inherent increased risk of a given pathology, significantly increasing the chances that he/she may develop the pathology later on in life [3]
- iii. The health promotion dimension is where the patient is pathology free and/or not inherently predisposed to risks for prospective illness, but is insistent on proactively participating in physical activity (exercise and games) in order to maintain a healthy lifestyle, thus preventing or even avoiding the acquisition of chronic illness and/or inherent risk factors that may compromise their health and wellbeing [3, 24].

The aforesaid healthcare dimensions function within the two healthcare paradigms, namely the pathogenic and fortogenic paradigms. The pathogenic paradigm is comprised of the illness care and illness prevention health care dimensions, thus requiring the clinical intervention of medical disciplines (medical doctors and nurses, paediatricians, physiotherapists, and occupational therapists) [6]. In the fortogenic paradigm, the patient has neither an existing pathology nor an intrinsic susceptibility to disease, injury and/or disability, but would like to be physically active in an attempt to prevent disease, injury, or disability [3]. It is essential to consider that the health dimensions are dynamic; an overlap in healthcare dimensions and paradigms can exist thereby necessitating the clinical expertise of different healthcare practitioners. The healthcare professional should be mindful of this fact and demonstrate professional integrity, which will on occasion lead to collaborative endeavours among practitioners who, in so doing, form a MDHRT. The fundamental objective is the delivery of the best healthcare possible: conflicts arising out of the adjudication of the jurisdiction of the SoP of a given discipline are counterproductive [25, 26].

5.1 The overlay of clinical expertise in the various health care dimensions

- i. The overlay between the two paradigms occurs in late stage rehabilitation in Area A (*final-phase rehabilitation or post medical phase*) (**Figure 1**). An excellent example can be given in an athlete experiencing glenohumeral (shoulder) pain and who initially presents himself to a medical doctor who will ascertain the musculoskeletal and/or ligamentous pathology and prescribe initial treatment such as PRICE (protection, rest, ice and elevation) and medication [27]. The patient is thereafter referred to a physiotherapist who performs early stage treatment entailing reduction in inflammation, and establishes normal pain-free movement. The patient would thereafter be referred to a biokineticist who would symmetrically strengthen the scapulothoracic and rotator cuff muscles, ameliorate proprioception and enhance scapulohumeral rhythm and functional movements in multidirectional planes. The glenohumeral rotator cuff muscles should be symmetrically strengthened because they orchestrate glenohumeral movement in all planes. The principal goal of the biokinetic rehabilitation is to foster normal scapulohumeral rhythm and multi-planar glenohumeral arthrokinematics under dynamic stress during

vigorous physical activity [25, 27]. Biokinetic rehabilitation becomes challenging at this stage if the patient has meagre motor skills, kinesthesia, co-ordination and proprioception. Another fundamental concern is patients' need to remain enthusiastic regarding the clinical rehabilitation in order to maintain patient compliance. Due to this fact, the biokineticist should refer such patients to a recreational therapist, who will endeavour to augment the patient's motor skills, kinesthesia, and proprioception as well as their body co-ordination through the prescription of individual fun functional physical activities, exercises and/or playful games. Once the patient has improved their motor skills, kinesthesia, proprioception and co-ordination, the patient can be referred back to the biokineticist to complete their return to sport evaluation. The biokineticist should also refer patients who are not enthusiastically engaged in sport or in a regular physical activity (exercise) to a recreational therapist so as to encourage a continuing engagement with recreational physical activity. This will encourage these patients to be physically active, abating their sedentary lifestyle. The recreational therapist can help the patient identify their recreational physical activity interests (painting, dancing, gardening, fishing, and trail walks) and subsequently encourage these activities as part of the patient's habitual lifestyle. A generally sedentary lifestyle and obesity are among two of the greatest problems that affect the health of South African children and adolescents and one of aims of the South African National Healthcare Strategy is to encourage a physical active lifestyle especially among children and adolescents. Cross-referral among South African health-care practitioners can help achieve this goal.

- ii. Area B is considered to be the *secondary prevention* of a pre-existing injury and/or pathology and the onset of co-maladies (**Figure 1**) [3]. In this scenario the patient has experienced a pathology, has undergone medical treatment and thereafter embarks on physical rehabilitation in order to prevent a reoccurrence of the pathology, the progressive deterioration of the pathology, or to prevent the development of comorbidities, while concurrently ameliorating their health status [3]. Adopting the earlier example of an athlete suffering from shoulder pain; the patient has successfully completed his/her acute and sub-acute phase physiotherapy and final-phase biokinetic rehabilitation, but would like to continue with symmetrical strengthening of the musculature of the sternoclavicular, acromioclavicular, scapulohumeral joints, seeking to improve kinaesthesia and proprioception and thereby collectively protecting the shoulder joint from a prospective relapse [27]. To this end Strydom et al. [3] reported that many patients enjoy playing structured games that have specific therapeutic benefits instead of complying with clinical final-phase exercise rehabilitation. The prescription of structured therapeutic games is known as *therapeutic recreation*, and would necessitate the referral of the patient to a recreational therapist [3]. Strydom et al. [3] recommend the prescription of fun, enjoyable games which increase patient's rehabilitation adherence, thereby increasing the success of the rehabilitative programme. Understanding the post injury stage of healing, motor and psycho-social development is imperative for the delivery of successful secondary prevention rehabilitation services to patients [27]. Therefore, the cross-referral to recreational therapists is of vital importance to this rehabilitation process. Plys [28] reported that individuals residing in assisted living communities engage in recreational activities, which enhances their

quality of life. Many individuals residing in assisting living communities have suffered limb loss (paraplegics), psychological challenges and/or elderly individuals who need assistance. Supervised recreational therapy will greatly enhance their physical conditioning and thereby ameliorate their quality of life.

- iii. In the second health dimension (illness prevention) the patient has no pathology but is at risk of developing non-communicable diseases due to an unhealthy lifestyle, or the patient would like to be physically active to improve their quality of life [3]. The illness prevention dimension is an extension of the illness care dimension found within the pathogenic paradigm. Patients in the illness prevention healthcare dimension require the expertise of both the medical and bio-psycho-social disciplines [3, 6]. The overlap between the illness care and illness prevention lies in Area D, which is regarded as *complication prevention* (**Figure 1**). The example of an insulin-dependent diabetic, who is overweight and adheres to medication and therapeutic exercises so as to negate auxiliary metabolic deterioration, is instructive [29]. Management of this condition requires the combined expertise of the medical discipline (paediatrician, nurse, endocrinologist and occupational therapist) and the bio-psycho-social discipline (recreational therapist, dietician and psychologist) [6, 24]. The combination of the long-term duration of the *complication prevention* rehabilitation and the age of patients must be seen as factors that require the expertise of both a recreational therapist and a biokineticist [3]. The recreational therapist ensures the prescription of fun, enjoyable recreational physical activity, while concurrently maintaining a clinical therapeutic agenda [3]. This enjoyment of evidence based, age appropriate physical activity will aid in the success of the rehabilitation services subsequently provided by the recreational therapist, advancing the overall goal of habitual adherence to physical activity [24]. Patients needing clinical rehabilitation may initially be referred to a biokineticist, thereafter the biokineticist should refer them to a recreational therapist thereby helping the patient habitually continue with fun, enjoyable recreational physical activity. Patients may at times be uncooperative, and unwilling to participate in clinical rehabilitation contrary to their needs. The introduction of fun, enjoyable recreational activity may be useful in persuading uncooperative patients to engage in physical activity.
- iv. In the fortogenic paradigm the person is healthy (pathology free) and is not at any intrinsic risk of injury and/or illness but enjoys being physically active [3]. These patients often consult biokineticists in order to prescribe exercise programmes, physical activity games and functional drills with the goal of enhancing their physical status and the intention of improving their health and quality of life. Practitioners should consider the age and zeal of the patient; these needs should be harnessed so as to propagate a habitual physically active lifestyle, forming positive habits that reinforce regular exercise and physical activity outside a clinical or competitive sport arena. Referral to a recreational therapist could be an outstanding choice, allowing the prescription of age appropriate therapeutic exercise and games delivered in such a way that it would make regular physical activity enjoyable, fun and habitual.

It is important to note that the stratification of final-phase exercise rehabilitation into the expertise of Biokinetics and Recreational Therapy will enhance patient experience and thereby increase physical activity well into late adulthood.

6. Conclusion

Optimal final-phase exercise rehabilitation warrants the mutual collaborative efforts of physiotherapists, occupational therapists, biokineticists, and recreational therapists, in working together towards the goal of holistic rehabilitation; cross-referrals among these exercise therapy professions is thus a necessary condition for success. This commentary touches on certain pertinent aspects of collaborative final-phase exercise rehabilitation among recreational therapists and biokineticists but is simultaneously aware that much more illustrative research and disciplinary encouragement is needed for successful cross-referrals to become a reality.

Author details

Terry Jeremy Ellapen^{1*}, Mariette Swanepoel¹, Marco Barnard² and Yvonne Paul³

*Address all correspondence to: tellapen1@yahoo.com

1 Department of Sport Rehabilitation and Dental Therapy, Tshwane University of Technology, Tshwane, South Africa

2 Independent Scientist

3 Physical Activity Sport and Recreation (Research Focus: PhASRec), North-West University, Potchefstroom, South Africa

References

- [1] Health Professions Council of South Africa (HPCSA). No 1746 (Act 56 of 1974). Available from: <http://www.hpcsa.ac.za> [Retrieved: 24, 2019]
- [2] Young MEM. Therapeutic recreation as a developing profession in South Africa. *World Leisure Journal*. 2015;**57**(1):34-45
- [3] Strydom GL, Wilders CJ, Moss SJ, Bruwer E. A conceptual framework of biokinetic procedures and referral system: An integrated protocol for the various health paradigms. *African Journal for Physical, Health Education, Recreation and Dance*. 2009;**15**(4): 641-649
- [4] Graham N, Nye C, Mandy A, Clarke C, Morris-Roberts C. The meaning of play for children and young people with physical disabilities: A systematic thematic synthesis. *Child: Care, Health and Development*. 2017;**44**:175-182
- [5] Mlenzana N, Frantz J. Rehabilitation model to promote interprofessional practice at primary health care level in Western Cape of South Africa. *African Journal for Physical Activity and Health Sciences*. 2017;**1.2**(Supplementary):247-254

- [6] Hall J. Scope of Professions of Physiotherapy, Podiatry and Biokinetics: Overlap identification. *Physiotherapy, Podiatry and Biokinetics News*. Tshwane: Health Professions Council of South Africa; 2013. p. 8
- [7] Janse Van Rensburg AM. A study to identify the physiotherapy referral practices of South African practitioners in Bloemfontein for musculoskeletal patients [Published thesis]. Bloemfontein: University of Free State; 2017
- [8] Robertson T, Long T. *Foundations of Therapeutic Recreation*. Champaign, IL: Human Kinetics; 2008. pp. 80-85
- [9] NARIC (National Rehabilitation Information Center). New Resources and Hidden Gems from the NARIC Collection. 2019. Available from: <https://naricspotlight.wordpress.com/2014/05/06/what-are-the-benefits-of-recreational-therapy/> [Retrieved: 23 July 2019]
- [10] Maharaj S. *Comments on the Overlap of Scope of Practice with Physiotherapy*. Johannesburg: South African Society of Physiotherapy; 2011
- [11] Macdonald MB, Bally JM, Ferguson LM, Murray BL, Fowler-Kerry SE, Anonson JMS. Knowledge of the professional role of others: A key inter-professional competency. *Nurse Education in Practice*. 2010;**10**:238-242
- [12] Miller KL, Kontos PC. The intraprofessional and interprofessional relations of neuro-rehabilitation nurses: A negotiated order perspective. *Journal of Advanced Nursing*. 2013;**69**(8):1797-1807. DOI: 10.1111/jan.12041. Epub: 16 November 2012. PubMed PMID: 23157380
- [13] Curran VR, Sharpe D, Forristall J, Flynn K. Attitudes of health sciences students towards inter-professional teamwork and education. *Learning in Health and Social Care*. 2008; **7**(3):146-156
- [14] Momsen A, Rasmussen JO, Nielsen CU, Iversen MD, Lund H. Multi-disciplinary team care in rehabilitation: An overview of reviews. *Journal of Rehabilitation Medicine*. 2012;**44**:901-912
- [15] Pecukonis E. Reducing barriers to interprofessional training: Promoting interprofessional culture competence. *Journal of Interprofessional Care*. 2008;**22**(4):417-428
- [16] Wynn GH. Complementary and alternative medicine approaches in the treatment of PTSD. *Current Psychiatry Reports*. 2015;**17**(8):600. DOI: 10.1007/s11920-015-0600-2. Review. PubMed PMID: 26073362
- [17] Shamseer L, Moher D, Clarke M, Ghersi D, Liberatti A, Petticrew M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P): Elaboration and explanation. *British Medical Journal*. 2015;**349**:7647-7647
- [18] Downs SH, Black N. The feasibility of creating a checklist for the assessment of the methodological quality both of randomized and non-randomized studies of health care interventions. *Journal of Epidemiology and Community Health*. 1998;**52**:377-384
- [19] Bakewell S. Medical gymnastics and the Cyrian collection. *Medical History*. 1997;**41**: 487-495

- [20] Ellapen TJ, Abrahams S, Desai FA, Mortimer J, Pillay K, Rugbeer N, et al. A profile of biokinetic services provided by the University of Kwa-Zulu Natal, 2005-2009. *African Journal for Physical Health Education Recreation and Dance*. 2010;**16**(4):560-569
- [21] Ellapen TJ, Swanepoel M. The evolution of the profession of biokinetics. *South African Journal for Research in Sport Physical Education Recreation*. 2017;**39**(1):41-49
- [22] Biokinetics Association of South Africa (BASA). Guidelines for Biokineticists. 2017. Available from: <http://www.biokinetics.org.za> [Retrieved: 24, 2019]
- [23] National Council for Therapeutic Recreation Certification (NCTRC). Paths to Certification. 2018. Available from: <https://nctrc.org/new-applicants/paths-to-certification/> [Retrieved: 24 July 2019]
- [24] Ehrman JK, Gordon PM, Visich PS, Keteyian SJ. *Clinical Exercise Physiology*. 3rd ed. Champaign, IL: Human Kinetics; 2013
- [25] Ellapen TJ, Swanepoel M, Hammill HV, Paul Y, Strydom GL. What Is the profession of biokinetics? In: *Sport and Exercise Science*. InfoTech; 2018
- [26] Ellapen TJ, Paul Y, Swanepoel M, Strydom GL. Current controversy: Transgression of biokineticists onto the scope of practice of physiotherapy. *African Journal for Physical Activity and Health Sciences*. 2018;**24**(3):316-331
- [27] Prentice WE. *Rehabilitation Techniques for Sports Medicine and Athletic Training*. 4th ed. New York: McGraw-Hill; 2004
- [28] Plys E. Recreational activity in assisted living communities: A critical review and theoretical model. *Gerontologist*. 2019;**59**(3):e207-e222
- [29] Durstine JL, Moore GE, Painter PL, Roberts SO. *ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities*. 3rd ed. Champaign, IL: Human Kinetics; 2009