

Physical Intelligence of UiTM Sport Science Undergraduates

Wee Eng Hoe, Ph.D.
Tan Chee Hian
Faculty of Sport Science & Recreation
UiTM Shah Alam

ABSTRACT

The purpose of this investigation is to determine the physical intelligence among the Sports Science undergraduates who are currently enrolled at the Faculty of Sports Science and Recreation, Universiti Teknologi MARA Shah Alam campus and branch campuses (Arau and Kuching campuses). The model of this study is based on Denis Postle's (The Mind Gymnasium, 1989) Model of multiple intelligence. Denis Postle's model includes four types of intelligence : 1) Emotional Intelligence, 2) Intuitive Intelligence, 3) Physical Intelligence and 4) Intellectual Intelligence. This study only examine Physical Intelligence. Further, this study adopted 5 dimensions of the 6 dimensions of Postle's Physical Intelligence which were fitness and health, enjoyment of physical activities, pride in manual skills and dexterity, sensible and balanced diet and love of the outdoors. A total of 215 Sport Science undergraduates enrolling in the Diploma and Degree courses were examined. Data were collected through a questionnaire formulated by the researchers. Results indicated that there was no significant difference in physical intelligence among undergraduates from different age groups. However, when undergraduates from different programmes were compared, significant difference was found in the 'love of outdoor' dimension. Multiple comparisons results showed that significant difference was between Diploma and Bachelor of Sport Science undergraduates with Diploma undergraduates love the outdoor more than Bachelor of Sport Science undergraduates.

Introduction

One of the obsessions of education system is intelligence, and to date the debate about human intelligence especially multiple intelligences continues. There is a need for better understanding of human intelligence. An enhanced perception of human potential requires that we develop a more holistic view of intelligence and its contribution to human achievement and personal effectiveness.

The *Theory of Multiple Intelligences* was introduced by Howard Gardner in his book: *Frames of Mind* (Gardner, 1983). He proposed seven intelligences that include *kinesthetic intelligence*. Even though *kinesthetic intelligence* is related to physical movement, it does not encompass the broad spectrum of physical ability. Subsequently, new thoughts have emerged with enhanced view of human intelligence. Denis Postle (The Mind Gymnasium, 1989) proposed four types of

intelligence: Emotional Intelligence, Intuitive Intelligence, Physical Intelligence and Intellectual Intelligence.

Denis Postle (The Mind Gymnasium, 1989) describes four types of intelligence as:

1. Emotional intelligence - radiating warmth, awareness of own feelings, sensitivity to feelings of others, creating harmony and goodwill, dealing with emotional issues openly, empathizing with the experience of others.
2. Intuitive intelligence - "gut" feelings, hunches, speculating about the future, using imagination, willingness to take risks, capacity for change.
3. Intellectual intelligence - reasoning, problem solving, analysis, calculation, handling information, abstract ideas and
4. Physical intelligence - concerned with fitness and health, enjoyment of physical activities, pride in manual skills and dexterity, sensible and balanced diet, love of the outdoors, and good at household tasks

Conceptual framework

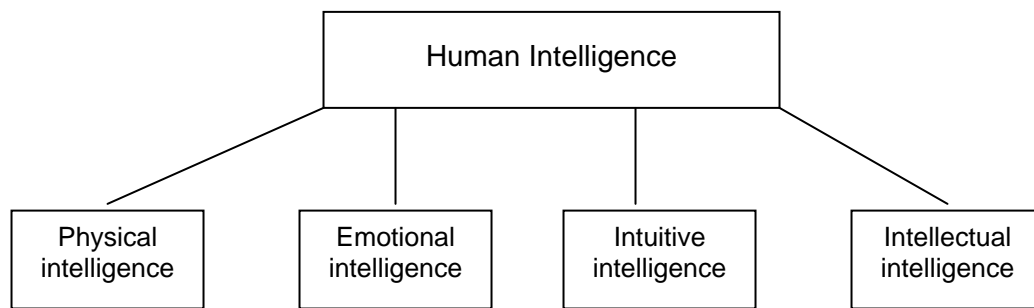
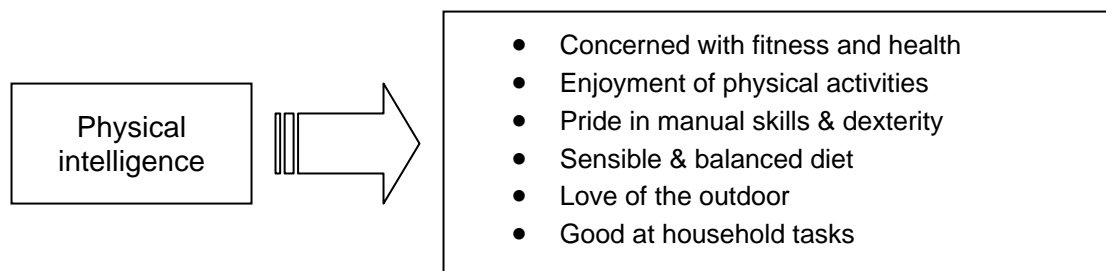


Figure 1: The Mind Gymnasium, Human Intelligence (Postle, D.,1989).



In Inside Organizations (1990), Charles Handy offers a working list which has several different types of intelligence: Logical, those who can reason, analyse and memorize. Spatial, those who can discern patterns in things and create them. Musical, those who can sing, play or make music of all sorts. Practical, the person who can pull a carburetor to bits but might never be able to spell the word or explain how they did it. Physical, the footballers, athletes and dancers among us. Intra-personal, the sensitive people who can see in themselves, the quiet perceptive ones. Inter-personal, who can make things happen and through people.

As such Cozens & Stumpf (1953) reported that anthropology and history research has revealed that physical activities and games have been fundamental aspects of all cultures throughout the history of the world. Physical activity and recreation are among the oldest arts in the humanities. Physical activities have been an important element in every culture and have been a significant force in human relations (Ali Soltani, 1983).

In the case of Physical Intelligence, administrators' goals would be the utilization of human capital with resources available. "The right decision is important because people are expensive resources; it is worth taking time and effort to find the right person for the right job" (Thomson, 1993: 27).

In Malaysia, Physical Intelligence is a new field of knowledge as far as sports and physical activities are concerned. With the development in Physical Education and Sports Science in the curriculum of secondary schools and tertiary institutions and with interests shown by public and private institutions in promoting the Sport Science courses, it is important that Physical Intelligence should be deeply explored to gauge the effects of curriculum and training to students. Further it is important because expertise in human intelligence enable individuals to solve problems (Gardner, 1983).

Intelligence can be developed through education processes, experiences and environments (Gardner, 1983) as such physical intelligence of sport science students would be able to be developed through the same process too.

Since Gardner (1993) emphasized that every individual has all type of intelligence but vary in terms of degree or strength, it will be interesting to discover the differences that exists in individuals. This study is concerned with the analysis of physical intelligence among UiTM undergraduates from the Faculty of Sport Science and Recreation.

Objectives

The objective of this study is to analyze the Physical Intelligence of Sports Science Students at the Faculty of Sport Science and Recreation, University of Technology MARA. Through the analysis of various domains, a profile of physical intelligence could be developed. This profile could provide useful feedback to educators in order to exploit the strength and to overcome the weaknesses of the Sport Science undergraduates. Specifically, this study attempts to answer the following hypotheses:

- i. There will be no significant differences in the physical intelligence of undergraduates from different age groups for any of the five sub-domains of PISSS.*
- ii. There will be no significant differences in the physical intelligence of undergraduates from different programmes for any of the five sub-domains of PISSS.*

Research Methods

This is a survey research using an instrument which is developed by the researchers. The survey groups included diploma and degree programmes undergraduates at the Faculty of Sport Science and Recreation.

Research Instrument

The questionnaire for this study is developed based on five of the Postle's (1989) six dimensions of the physical intelligence dimensions. This instrument includes 59 items that are sub-divided as in Table 1.

Table 1
Items of the Physical Intelligence for Sport Science students (PISSS)

Domains	Items
Concerned with fitness and health	11
Enjoyment of physical activities	13
Pride in manual skills and dexterity	13
Sensible and balanced diet	13
Love of the outdoor	9

Research Findings

Research sample

The sample population consisted 215 students from the diploma and degree programmes. 33 students were diploma students, 56 were Bachelor of Sport Management undergraduates and 132 were bachelor of Sport Science undergraduates. 164 students were from the science stream and 51 were from the arts prior enrolling into the present programme.

Reliability of the instrument

The internal consistency for the Physical Intelligence for Sport Science Students (PISSS) was determined using the alpha coefficient. The values of Cronbach alpha obtained for each domain ranged from 0.70 to 0.77. The alpha coefficient for the whole instruments is 0.78. The alpha values for the five sub-domains are shown in Table 2.

Table 2
Alpha values for the five sub-domains of PISSS

Domains	Alpha coefficient
Concerned with fitness and health (Cfh)	0.70
Enjoyment of physical activities (Epa)	0.73
Pride in manual skills and dexterity (Pmsd)	0.71
Sensible and balanced diet (Sbd)	0.77
Love of the outdoor (Lod)	0.75

Validity of the instrument

Table 3 shows the correlations among domains using Pearson Correlation Coefficients which is significantly at 0.01 level.

Table 3
Correlation Among Domains of PISSS

	Cfh	Epa	Pmsd	Sbd	Lod
Cfh	1				
Epa	0.523**	1			
Pmsd	0.524**	0.436**	1		
Sbd	0.404**	0.319**	0.365**	1	
Lod	0.439**	0.406**	0.467**	0.218**	1

** Significant at $p < .01$

Hypothesis 1

There will be no significant differences in the physical intelligence of undergraduates from different age groups for any of the five sub-domains of PISSS.

Table 4
ANOVA between mean physical intelligence scores of Sport Science undergraduates when compared to different age groups

Domains		Sum of Squares	df	Mean Square	F	Sig.
Concerned for Fitness and health	Between Groups	.563	2	.281	.011	.989
	Within Groups	5521.921	212	26.047		
	Total	5522.484	214			
Enjoyment of physical activities	Between Groups	20.177	2	10.088	.311	.733
	Within Groups	6820.593	210	32.479		
	Total	6840.770	212			
Pride in manual skills and dexterity	Between Groups	42.937	2	21.469	.486	.616
	Within Groups	9369.686	212	44.197		
	Total	9412.623	214			
Sensible and balanced diet	Between Groups	108.662	2	54.331	2.175	.116
	Within Groups	5269.867	211	24.976		
	Total	5378.528	213			
Love of the outdoor	Between Groups	137.176	2	68.588	2.102	.125
	Within Groups	6916.620	212	32.626		
	Total	7053.795	214			

For the purpose of analysis, the age groups of students are categorized into three groups: < 21 years group, 21-29 years group and 30 & above years group. The results in Table 4 were not statistically significant. Thus Hypothesis 1 was accepted for all the sub-domains of PISSS.

Hypothesis 2

There will be no significant differences in the physical intelligence of undergraduates from different programmes for any of the five sub-domains of PISSS.

Table 5
ANOVA between mean physical intelligence scores of Sport Science undergraduates when compared to different programmes

Domain		Sum of Squares	df	Mean Square	F	Sig.
Concerned for Fitness and health	Between Groups	44.451	2	22.225	.860	.425
	Within Groups	5478.033	212	25.840		
	Total	5522.484	214			
Enjoyment of physical activities	Between Groups	8.006	2	4.003	.123	.884
	Within Groups	6832.764	210	32.537		
	Total	6840.770	212			
Pride in manual skills and dexterity	Between Groups	2.326	2	1.163	.026	.974
	Within Groups	9410.297	212	44.388		
	Total	9412.623	214			
Sensible and balanced diet	Between groups	113.902	2	56.951	2.283	.105
	Within Groups	5264.626	211	24.951		
	Total	5378.528	213			
Love of the outdoor	Between Groups	228.947	2	114.473	3.556	.030*
	Within Groups	6824.848	212	32.193		
	Total	7053.795	214			

The results in Table 5 showed that students from different programmes differed significantly in the 'love of outdoor' domain. Thus Hypothesis 2 was accepted for 'love of outdoor' domain and reject for the other four domains of PISSS.

Table 5a
Multiple comparisons results obtained for physical intelligence scores of Sport Science students from different programmes

Multiple Comparisons 5 D vs program Tukey HSD

Dependent Variable	(I) program of the subject	(J) program of the subject	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval		
Love of the outdoor						Lower Bound	Upper Bound	
		Bachelor Sports Science	Bac.Sport Management	-1.5697	.94220	.221	-3.7936	.6542
			Diploma	-2.6667(*)	1.10427	.044	-5.2731	-.0603
		Bachelor Sport Management	Bac. Sports Science	1.5697	.94220	.221	-.6542	3.7936
			Diploma	-1.0970	1.27255	.665	-4.1006	1.9066
		Diploma	Bac. Sports Science	2.6667(*)	1.10427	.044	.0603	5.2731
			Bac.Sport Management	1.0970	1.27255	.665	-1.9066	4.1006

Multiple comparisons results in Table 5a show that there is significant differences between *Diploma* students and *Bachelor of Sport Science* students. Table 5b shows that *Diploma* students love outdoor more than *Bachelor of Sport Science* students.

Table 5b
Mean scores of students from different programme for Love of outdoor

Programme	N	Mean Scores
Bachelor of Sport Science	132	36.03
Bachelor of Sport Management	50	37.60
Diploma	33	38.70

Conclusion and Discussion

The results of the study showed that Sport Science undergraduates from Diploma and Bachelor Programmes were similar in terms of their physical intelligence. Different backgrounds did not differentiate the Sport Science undergraduates. This is supported by Gardner (1983) that Intelligence can be developed through education processes, Experiences and environments, as such physical intelligence of sport science undergraduates would develop through the same process too. However the lowest mean score for the undergraduates from Bachelor of Sport Science programme as compared to the other two groups needs further investigation.

References

- Angyal, A. L. (1941). *Foundations for a science of personality*. New York: Commonwealth Fund
- Argyris, C. (1964). *Integrating the Individual and Organization*. Chichester: Wiley.
- Armstrong, T. (1994). *Multiple Intelligence in the classroom*. Alexandria, Virginia: Association for Supervision Curriculum Development.
- Buzan, T. (1982). *Use Your Head*. London: Ariel Books/BBC Books.
- Campbell, L.B. (1994). *The Multiple Intelligence handbook. Lesson Plans and more*. Stanwood, W.A.: Campbell and Associates.
- Cozens, F. W. & Stumpf, F. S. (1953). *Sports in America Life*. Chicago: University of Chicago Press.
- Gardner, H. (1983). *Frames of Mind : A Theory of Multiple Intelligences*. New York: Basic Book.
- Gardner, H. (1993). *Multiple Intelligences: Theory and practice*. New York: Basic Book.
- Handy, C. (1976). *Understanding Organizations*. London : Penguin.

- Handy, C.(1990). *Inside Organization*. London: BBC Books.
- Kenyon, G. S. (1968). A conceptual model for characterizing physical activity. *Research Quarterly*, 39, 96-108.
- Kerlinger, F. N. (1973). *Foundation of behavioural research*. New York: Holt, Rinehart & Winston.
- McGregor, D.(1960). *The Human Side of Enterprise*. New York : McGraw- Hill.
- Postle, D. (1989) The Mind Gymnasium. London : MacMillan.
- Schein, E.H. (1980) Organizational Psychology. Hemel Hampstead : Prentice-Hall.
- Thomson, R. (1993). Managing People. Oxford:Butterworth-Heinemann.
- West, M. & Ainscow, M. (1991). Managing school development: A practical guide. London: David Fulton.