The Trends and Issues of Physical Fitness Theses and Dissertations in the United States and Canada
美加地區體適能博碩士論文研究趨勢分析

Chung-Hung HUNG

Office of Physical Education,
National Chin-Yi University of Technology, TAIWAN

洪彰鴻

台灣國立勤益科技大學體育室

Abstract

This study profiled the trends and issues of physical fitness theses and dissertations in the United States and Canada from 2000 to 2009 years. Research articles, 241 physical fitness theses and dissertations, were collected from ProQuest database. Methodology of this study took content analysis to analyize the trends and issues including the research topics, research types, subjects and physical fitness component. In the wake of going through coding, categorizing, description and interpretation, the research findings were generated. Results showed that the topics of physical fitness theses and dissertations mainly focused on "physiology characteristics", "psychology characteristics", "program & training", and "physical activity". The research type mainly use descriptive approach and experimental approach to conduct their research. The health-related fitness occupied the lion share of physical fitness theses and dissertations, and the researchers pay more attention on cardiorespiratory fitness. Future researchers can delve into the trends and issues on physical fitness journals and other physical fitness researches.

Key Word: physical fitness, theses and dissertations, content analysis

摘　要

本研究目的為探討美加地區2000至2009體適能博碩士論文研究趨勢。從ProQuest 資料庫共蒐集到241篇體適能博碩士論文。透過內容分析法進行研究主題、研究對象、研究類型、體適能內涵等項目之資料統整與分析。結果顯示：研究主題主要集中於「生理特徵」、「心理特徵」、「計畫與訓練」、「身體活動」等主題。描述類與實驗類的研究類型為主要的研究類型。健康體適能為主要的研究趨勢，並且集中於心肺適能。

關鍵詞：體適能、博碩士論文、內容分析法

Introduction

Physical fitness is fundamental to health, which can be improved through long-term, regular participation in exercise and maintenance of a healthy lifestyle (American Council on Exercise, 1998). Physical fitness research is one of the most important research topics in health promotion. Physical fitness research trends are constantly developing, which may be the result of sophisticated research, development of new fitness concept and types of equipment. The research of physical fitness covered a variety of topics, including physical activity, physical program, physiology, psychology, sports medicine, physical fitness instruction, physical fitness test, and so on.

Tracing back to the physical fitness research, each one is significant and made contributions in the field of physical fitness. To the best of our knowledge, there is no comprehensive review of physical fitness theses and dissertations until now.

In addition, the trends in the United States indicate that there is a steady decline in physical fitness in the school age population. Adults show greater risk for disease with obesity reaching an all-time high. Every major National health organization is attempting to combat this occurrence, including the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, and the National Center for Chronic Disease Prevention which all emphasize the dire need for the initiation of new health programs directed at schools to slow the age-related decline of activity and health (Biagioli, 2001).

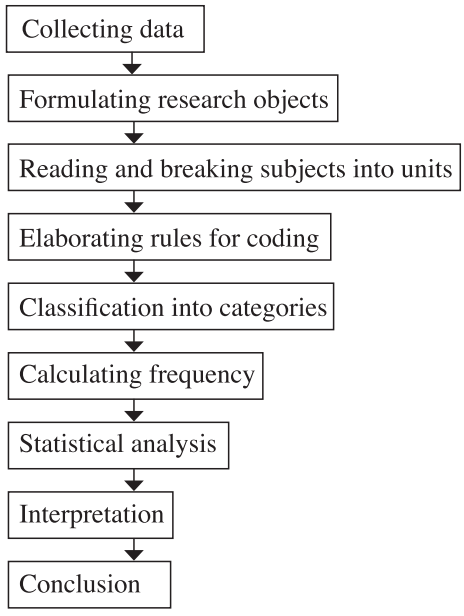
Therefore, our study profiled the trends and issues of theses and dissertations of physical fitness in the United States and Canada from 2000 to 2009 years. This study is to offer a general development pattern of current theses and dissertations on the physical fitness research; and then, to dope out a certain part that deserves more attention in the field of physical fitness. Methodology of this study took content analysis to analyize the trends and issues including the research topics, research types, subjects and physical fitness component. Based on the retrospect of previous physical fitness research, a general understanding of current physical fitness research can be known. At the same time, the trends in this field can be foreseen and suggestions can be offered for future studies.

Methods

Research Design

The Figure 1 below is the research design of this study. It focused on the content analysis of physical fitness theses and dissertations in the Unites State and Canada. Content analysis is context sensitive and therefore allows the researcher to process as data texts that are significant, meaningful, informative, and even representational to others (Krippendorff, 2004, p. 41).

Figure 1. Flow Chart of Content Analyses of Physical Fitness Research.



Rational for Content Analysis

The method used for this study was content analysis. Content analysis is a commonly-utilized methodology in social science, particularly on the communication study, and is a method of studying and analyzing communication in a systematic, objective, and quantitative manner for the purpose of measuring variables, then, engender a quantitative description of symbolic content in a text (Neuman, 1999; Wimmer & Dominick, 2006, p. 150). Basically, content analysis is a research tool used to assist researchers in gathering and extracting facts from any document systematically (Masood, 2004).

Content analysis is typically classified as either manifest or latent (Babbie, 2002; Berg, 2004). Latent content analysis is a technique used to develop emerging themes from narrative data, and is determined by a subjective evaluation of the overall content of the narrative (Tashakkori & Teddlie, 1998). Manifest content analysis establishes a priori categories, or a coding system, and then codes narrative data based on these categories. The study, therefore, uses the technique of manifest content analysis to code the articles. The categories used for coding are described in detail in the following sections.

Subjects

241 theses and dissertations issued in the United States and Canada from 2000-2009 were selected form ProQuest data base (http://proquest.umi.com/pqdweb) by using keyword search with "physical fitness", retrieved on February 25, 2010.

Data Analysis

Generally speaking, four steps were gone through in content analysis including coding, categorizing, description and interpretation (Patton, 1990, p. 381).

Coding

Coding was the first step to develop a research's categories, patterns and concepts (Neuman, 1999). A coding sheet was prepared for analysing the theses and dissertations by categories. The unit of analysis for this study was frequency. The coder identified basic coding categories such as topics, gender, subjects, physical fitness component, type of research. The gathered data was be systematically and objectively converted into another format for analysis.

Categorizing

Categories were the framework of content analysis. All of categories, which make sense, must be stable, compact and coherent. Then, the subsequent work could be consistent with the main research questions. Categorizing determines the quality of content analysis of this research. Three principles require to be accomplished in categorizing: (a) exhaustive, (b) mutually exclusive and (c) independent (Sarantakos, 1993, as cited in Harris, 2001).

The following categories were used to code physical fitness theses and dissertations for analysis:

Topic

The topic was coded as: (1) physical activity, (2) program & training, (3) physiology characteristics (4) psychology characteristics, (5) environmental characteristics, (6) sports medicine & disease, (7) instructors & instruction, (8) achievement & peformance, (9) individual & group characteristic, (10) physical fitness test, and (11) others.

Academic Degree

The academic degree code number was: (1) thesis, (2) dissertstion.

Research Type

The articles were coded according to type of research: (1) analytical, (2) descriptive, (3) experimental, (4) qualitative, (5) others.

Research Subjects

The research subjects were coded as: (1) atheletes, (2) students, (3) patient & obesity, (4) occupational job, (5) masses.

Physical Fitness Component

Physical fitness component was coded as: (1) health-reated fitness, (2) skill-related fitness, (3) both health and skill-reated fitness, (4) functional fitness, (5) specifics fitness, and (6) others.

Gender

Articles were coded according to whether the focus was (1) male, (2) female, (3) both male & female or neutral.

Description

Grounded on the results of coding and categorizing, the researcher delineated the finding in this stage, including the frequencies of the development pattern, the focuses of physical fitness studies in each topic.

Interpretation

Based on the description of data analysis, the results were attached significance. Then, the researcher explained the finding, make inferences as well as reach the conclusion.

Reliability

In order for the coding to be credible, an intercoder reliability analysis was carried out. Cohen's kappa was calculated using the example suggested by Niglas (2004). Reliability for identifying the research topic was determined using a sample of 24 articles (10% of the data) by two independent coders and achieved an adequate reliability of Cohen's kappa = .78 in the "topic" and kappa values for other variables averaged .84, indicating a good agreement (Altman, 1991).

Statistical Analysis

The statistical analysis was conducted in the frequency computing. The SPSS statistical software package and Microsoft Excel 2003 were employed to analyze the gathered data.

Limitations of the Study

One limitation is the purposeful sample taken from ProQuest database. Research in areas of physical fitness published in other journals not considered in this study.

Results

Research findings were presented in following sections, including descriptive statistics of collected theses and dissertations and description of existing phenomenon.

Research Volume

This section delineates the status quo of physical fitness research in the United States and Canada. 287 theses and dissertations entitled with physical fitness from 2000 to 2009 were collected through ProQuest database. In the wake of skimming all collected documents, repeated and missed subjects were eliminated from the research list. Finally, 241 physical fitness theses and dissertations were selected for the study. Of the 241 articles, 87 were theses and 154 were dissertations which occupied the loin share. The volume of physical fitness research across time can be engendered as Table 1. The total number of theses and dissertations are shown in the "first 5 years" and "last 5 years" columns. During the last 5 years, the number of theses and dissertations had increased by 8 %.

Table 1. Yearly Frequency and Percentage of Physical Fitness Theses and Dissertations.

	2000	2001	2002	2003	2004	First 5 yrs	2005	2006	2007	2008	2009	Last 5yrs
Frequency	23	18	28	17	25	111	20	28	23	35	24	130
Percentage	9.5	7.4	11.6	7.1	10.4	46.0	8.3	11.6	9.5	14.5	10.0	54.0

Research Topics

We differentiate 11 topics on physical fitness theses and dissertations (Table 2). A frequency table was generated in order to take a quick look at what topic appear consistently during the decade. Table 3 shows that "physiology characteristics" (16.1%) topic was the most while "psychology characteristics" (15.8%), "program & training" (14.5%), and "physical activity" (11.6%) came in second, third, and fourth respectively. "Environmental characteristics" was the least at covered 2.5%. In addition, number of paper which focus on the topic of "physical activity" was decrease tends, wherease number of paper which fouce on the topic of "sports medicine & disease", "achievement & performance", and "physical fitness test" was increase trends. As we can see more and more researchers care these issue. Thus, the trend shows that there was a growing attention to promote health, academic achievement, skill performance and the validity of physical fitness test tool.

Table 2. Topic on Physical Fitness Theses and Dissertations.

Topic	Contain cluster
Physical activity	physical fitness activity, recreation activity, occupational physical activity, sprot activity, aquatic activity, walking, joging, cycling, gyms
Program & Training	fitness & wellness program, physical education course & curriculum, resistance & aerobic training, conditioning & exercise program, health promotion strategies
Physiology characteristics	physical responds to exercise, hormonal response to exercise, metabolic, nutrition, anthropometry, body composition, physique, aging, health status
Psychology characteristics	social psychology, personality traits, stress, attitudes toward physical activities, motivation to be physically active, goal orientation, sel-effency, self-wellness, physical self-concept, perceived fitness, health perceptions
Environmental characteristics	social economic, family income, parental level of education, lifestyle factors
Sports medicine & Disease	injuries, rehabilitation, therapy, dysfunction, mortality
Instructor & Instruction	teaching, instruction, counseling, guide, physical educator, fitness instructors, sports coach, physical fitness learning, motor learning
Achievement & Peformance	academic achievement & performance, cognitive & psychomotor performance, sport & job performance, fitness knowedge
Individual & Group characteristic	age, grade, level, gender, race, atheletes
Physical fitness test	physical fitness screening protocol, physical fitness norm, pedometer

Table 3. Topic Frequencies of Physical Fitness Theses and Dissertations.

	A	B	C	D	E	F	G	H	I	J	K	Total	%
2000	4	3	4	6	0	0	3	0	0	2	1	23	9.5
2001	4	5	1	1	0	2	1	1	0	3	0	18	7.4
2002	4	1	8	3	1	1	2	1	5	0	2	28	11.6
2003	3	3	2	4	2	0	1	2	0	0	0	17	7.1
2004	6	3	1	5	1	1	5	0	0	0	3	25	10.4
2005	3	3	3	2	0	3	1	1	0	2	2	20	8.3
2006	1	4	5	5	1	3	2	0	1	5	1	28	11.6
2007	1	6	1	8	0	0	0	3	1	2	1	23	9.5
2008	1	3	10	0	0	4	4	3	0	6	4	35	14.5
2009	1	4	4	4	1	4	1	4	0	0	1	24	10.0
Total	28	35	39	38	6	18	20	15	7	20	15	241	
%	11.6	14.5	16.1	15.8	2.5	7.5	8.3	6.2	2.9	8.3	6.2		100

Note:

A: Physical activity
B: Course, Program & Training
C: Physiology characteristics
D: Psychology characteristics
E: Environmental characteristics
F: Sports medicine & Disease
G: Instructor & Instruction
H: Achievement & Peformance
I: Individual & Group characteristic
J: Physical fitness test
K: Others

Research Types

Research types may be divided into five basic categories: analytical, descriptive, experimental, qualitative, and creative (Thomas, Nelson, & Silverman, 2005, pp. 17-20). The research types of each thesis and dissertation was classified into one of the following five categories: (1) analytical category includes historical research, philosophic research, reviews, meta-analysis. (2) descriptive category includes survey techniques, case studies, observational research, correlation studies, observational studies, epidemiology research. (3) experimental category includes preexperimental, true experimental, and qusi-experimental. (4) qualitative catrgory includes enthnographic, naturalistic, interpretive, and participant observational. (5) others.

Table 4 shows the frequency of research types of physical fitness theses and dissertations. Of the 241 physical fitness theses and dissertation, 136 research conducted in descriptive type covered 56.4% and 67 research were carried out with experimental type coverd 27.8%. Descriptive and experimental type were most commonly applied in physical fitness theses and dissertations. Qualitative type was the least at covered 6.2% of physical fitness theses and dissertations.

Table 4. Research Types of Physical Fitness Theses and Dissertations.

	Analytical	Descriptive	Experimental	Qualitative	Others	Total
Frequency	18	136	67	15	5	241
Percentage(%)	7.5	56.4	27.8	6.2	2.1	100

Table 5 shows that descriptive type was the mostly utilized research type in the following topic : 1. physical activity 2. physiology characteristics 3. psychology characteristics. Experimental type was the mostly utilized research type in the "fitness course", "program & training" topics. In addition, the analytical research type was not employed by "fitness course", "program & training" and "psychology characteristics" topics. The qualitative research type was not employ by "physical activity" and "physiology characteristics" topics.

Table 5. Cross Table of Research Types and Research Topic.

	Analytical	Descriptive	Experimental	Qualitative
Physical activity	3(10.7%)	15(53.6%)	8(28.6%)	0
Program & Training	0	6(17.1%)	24.(68.6%)	4(11.4%)
Physiology characteristics	2(5.1%)	30(76.9%)	7(17.9%)	0
Psychology characteristics	0	21(58.3%)	12(33.3%)	3(8.3%)

Reaearch Subjects

Our study want to explore which subjects were selected in physical fitness theses and dissertations in the United States and Canada. Subjects of these researches were included as follows: athletes, students, patient & obesity, occupational job, and masses (Table 6). It's believe physical fitness play a significant role in the physical development of students. Therefore, "students" as subjects of physical fitness research was the most, "patient & obesity" and "occupational job" were second and third. The topic of "occupational job" was concentrated on firefighters. Whereas, "athletes" as subjects of physical fitness research was the least.

Table 6. Subjects of Physical Fitness Theses and Dissertations.

	Atheletes	Students	Patient & Obesity	Occupational	Masses	Total
Frequency	13	85	31	30	41	241
Percentage	5.4%	35.5	12.9	12.4	17.0	100

Furthermore, table 7 shows the ages of the subjects. Subject with adult-aged was the most research and subject with elementary school-aged was second-most. Subject with old-aged was the least applied in physical fitness theses and dissertations.

Table 7. Subjects Aged of Physical Fitness Theses and Dissertations.

	Elementary school-aged	High school-aged	College-aged	Adult-aged	Old- aged	Mix-aged	Total
Frequency	47	34	22	67	22	6	241
Percentage(%)	19.5	14.1	9.1	27.8	9.1	2.5	100

Physical Fitness Component

The physical fitness component was classfied as health-reated fitness, skill- related fitness, both health & skill-reated fitness, functional fitness, and specifics fitness. Articles were coded in one of these five categories. Table 8 shows that "health- reated fitness" (68.0%) occupied the lion share, and "specific fitness" (5.8%) came in second. We can clearly see the trend that theses and dissertations on physical fitness were concentrated on "health related-fitness" during past 10 years in the US and Canada.

Table 8. Physical Fitness Content of Physical Fitness Research.

	Health-reated fitness	Skill-related fitness	Health & Skill-reated fitness	Functional fitness	Specific fitness
Frequency	164	3	8	8	14
Percentage(%)	68.0	1.2	3.3	3.3	5.8

Gender

Of the 241 physical fitness articles, 23.7% articles were considered to have a gender focus. The female gender focus was observed in 12.9% of the physical fitness articles and the male gender focus was observed in 10.8% of the physical fitness articles. Focus on female gender was higher than male gender.

Applied Statistic Method

As for applied statistic method, regression analysis (22.8%) was the most statistic method utilized in physical fitness theses and dissertations while the student t-test (20.3%) and correlation analysis came in second and third.

Conclusion

This research presented the tendency and features of physical fitness theses and dissertations in the United States and Canada with the aide of content analysis. A total of 241 theses and dissertations were reviewed. Based on above finding of our sdudy, the topics of physical fitness theses and dissertations mainly focused on "physiology characteristics", "psychology characteristics", "program & training", and "physical activity". About the research type, most articles conducted in descriptive and experimental research types. Of the 241 physical fitness theses and dissertations, 23.7% articles were considered to have a gender focus. The subjects of the physical fitnesss theses and dissertations mainly focused on the students population. Health-related fitness occupied the lion share of physical fitness theses and dissertations.

To our knowedge, there is no comprehensive review of physical fitness theses and dissertations until now. A comprehensive review of physical fitness study is needed for future researchers. That is the reason why this research is produced. This study focused on the trends and issues of theses and dissertations. Future researchers can delve into the trends and issues on physical fitness journals and other physical fitness articles.

References

Altman, D. G. (1991). *Practical Statistics for Medical Research*. p. 404, London England: Chapman and Hall.

American Council on Exercise. (1998). *Exercise for older adults: ACE's guide for fitness professionals*. Champaign, IL: Human Kinetic.

Babbie, E. (2002). *The basics of social research (2nd ed.)*. Belmont, CA: Wadsworth Publishing.

Berg, B. L. (2004). *Qualitative research methods for the social sciences*. (5th ed.). Boston, MA: Allyn & Bacon.

Biagioli, B. D. (2001). *A comparison of the effectiveness of nine months of different high school activity groups on selected measures of health-related physical fitness*. Unpublished Ed. D Thesis, United States Sports Academy.

Harris, H. (2001). Content analysis of secondary data: a study of courage in managerial decision making. *Journal of Business Ethics, 34,* 191-208.

Krippendorff, K. (2004). *Content Analysis: An Introduction to its Methodology (2nd ed.)*. p. 41, Thousand Oaks, CA: Sage Publications.

Masood, M. (2004). *Trends and issues as reflected in traditional educational literature: A content analysis*. Unpublished Ph.D. Dissertation, Indiana University.

Neuman, W. L. (1999). *Social Research Methods: Qualitative and Quantitative Approaches (4th ed.)*. Boston: Allyn and Bacon.

Niglas, K. (2004). *The combined use of qualitative and quantitative methods in educational research*. Tallinn Pedagogical University Dissertations in Social Sciences 8. Tallinn, Estonia: Tallinn Pedagogical University.

Patton, M. Q. (1990). *Qualitative Evaluation and Research Methods*. (2nd ed.). p. 381, California: Sage.

Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches*. Thousand Oaks, CA: Sage Publications.

Thomas, J. R., Nelson, J. K., & Silverman, S. J. (2005). *Research methods in physical activity (5th ed.)*. pp. 17-20, Champaign, I L: Human Kinetics.

Wimmer, R. D., & Dominick, J. R. (2006). *Mass Media Research: An introduction*. pp. 149-174, Belmont, CA: Thomson Wadsworth.

Correspondence

Chang-Hung Hung
Office of Physical Education,
National Chin-Yi University of Technology,
No.35, Lane 215, Section 1, Chung Shan Rd.,
Taiping City, Taichung, 411, TAIWAN
E-mail:hongjh@ncut.edu.tw