

Analysis of Research & Issues in Kinesiology

Introduction and Overview

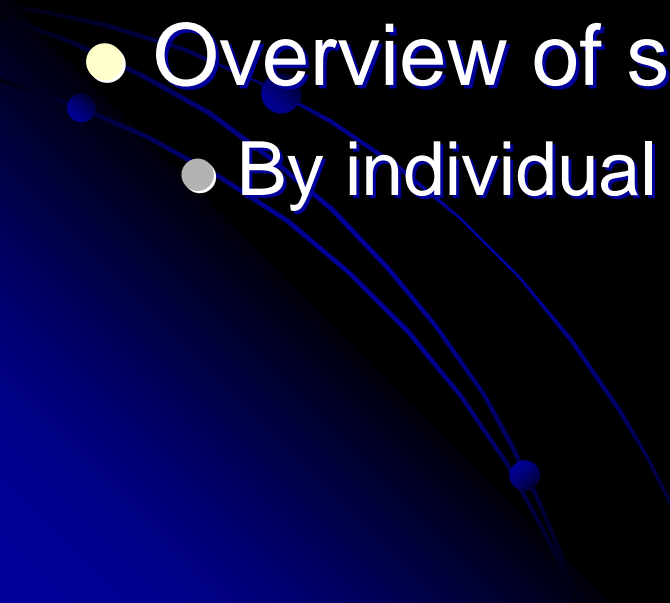
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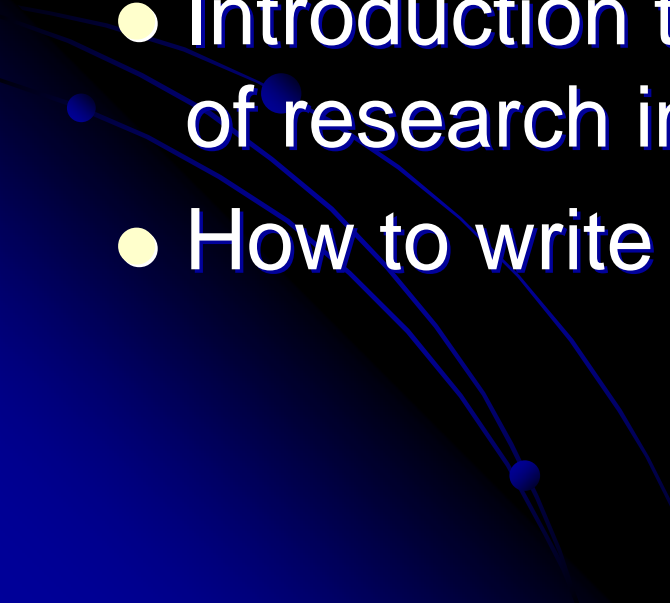
Department of Kinesiology




Overview and Introduction

- What ought a KIN grad student know?
 - Objectives for our program graduates
 - Overview of grad methods classes/programs in general
 - Overview of selected topics in Kinesiology
 - By individual subdiscipline/emphasis area
- 

Overview and Introduction

- Where have we come from – brief historical overview of various subdisciplines
 - Contemporary research trends
 - Introduction to the evaluation and analysis of research in kinesiology
 - How to write a solid article critique
- 

What do you hope to gain from your KIN Grad experience?

- **Exercise:** In groups of 2-3 compile a list of the top five expected (or hopeful) outcomes of your graduate studies in the KIN department at SJSU.
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Outcomes & Objectives - General

- Be able to identify important and emerging research topics in the broad academic realm of Kinesiology
- Be able to analyze and critique both formal and informal presentation of research data (from journal article to infomercial, to newspaper story)
- Be able think and write creatively and critically about major issues in your field

Objectives of the SJSU KIN Grad Program

- Know how to conduct research
- Know how to evaluate both qualitative & quantitative research
- Obtain marketable skills
- Acquire knowledge/strength in a specific area of study
- Have the ability to engage in professional dialogue to reflect a comprehensive understanding of the body of knowledge in your area of study

Major Issues in Kinesiology

- What constitutes an “issue” in Kinesiology?
- How do we as academics and/or practitioners weigh in on these issues?
- How do we make sense of new and emerging information and research in our various subdisciplines?
- How do we integrate credible information into our practice?

Trends and Topics

- Get together with students who share your interdisciplinary focus-

Construct a list of the top issues your area faces:

Athletic Training

Adapted Physical Activity

Philosophy

Sport History

Sport Sociology

Sport Psychology

Sport Management

Motor Learning

Exercise Physiology

Motor Development

Measurement and Eva

Biomechanics

A quick look at research methods classes in Departments of Kinesiology – 2002 study

A Descriptive Analysis of Research Methods Classes in Departments of Kinesiology and Physical Education in the United States

Stephen Silverman and Xiaofen Deng Keating

Research Quarterly for Exercise and Sport
©2002 by the American Alliance for Health,
Physical Education, Recreation and Dance
Vol. 73, No. 1, pp. 1-9

Research training takes many forms and is generally a part of graduate education. A common and important aspect of research training is the introductory research methods class offered by many departments. The purpose of this study was to examine the content, process, and instructors of introductory research methods classes in departments of kinesiology and physical education in the United States. A survey was designed and extensively pilot tested. The sample was selected from all departments offering graduate degrees in the United States. Among the many results, the data indicate that one book was required reading in more than half the classes and class size averaged about 19 students. A number of objectives were stated for most classes, with understanding research, applying research to professional situations, critiquing the research literature, and planning research indicated most often. Quantitative design and analysis topics were emphasized more strongly than qualitative design and analysis topics. Professors indicated that more than half the class time was spent lecturing and most grades were based on exams, preparation of a research proposal, and regular assignments. The professors were relatively experienced, had a variety of specialty areas, and were reasonably productive researchers. The trends suggest that alternative research methodologies have not been quickly added to the research methods curriculum.

Table 1. Most used textbooks in research methods classes

Book	Required	Recommended	Total
<i>Research Methods in Physical Activity</i> (Thomas & Nelson, 1996)	47	6	53
<i>Publication Manual of the American Psychological Association</i> (APA, 1994)	37		37
<i>Proposals That Work: A Guide for Planning Dissertations and Grant Proposals</i> (Locke, Spirduso, & Silverman, 1993)	6	6	12
University or department thesis guidelines	8	1	9
<i>Conducting and Reading Research in Health and Human Performance</i> (Baumgartner & Strong, 1994)	3	1	4
<i>Essentials of Modern Research Methods in HPER</i> (Berg & Latin, 1994)	3	1	4
<i>Research in Physical Education, Exercise Science, and Sport</i> (Cicciarella, 1997)	2	1	3
<i>Interpreting Research in Sport and Exercise Science</i> (Hyllegard, Mood, & Morrow, 1996)	2	1	3
<i>Understanding Research Methods: An Overview of the Essentials</i> (Patten, 1997)	2	1	3

KIN 250 Text

Table 3. Percentage of various assessments in determining grades

	Masters (n = 40)		Programs Doctoral (n = 33)		Total (N = 73)	
	M	SD	M	SD	M	SD
Participation	3.18	5.35	3.94	8.35	3.52	6.83
Regular assignments	17.20	13.92	18.89	16.32	17.96	14.97
Research or grant proposal	25.93	20.55	25.55	19.48	25.75	19.94
Tests, exams, and quizzes	44.38	20.09	39.06	25.96	41.97	22.92
Presentations	7.58	8.72	6.01	9.89	7.14	9.22
Other	2.25	8.00	2.00	6.83	2.14	7.45

Note. Values are mean percentage with standard deviation.

Most used textbooks in KIN programs and % of assignments used in determining grades

Table 2. Mean content emphasis in research methods classes

	Masters programs (n = 43)		Doctoral programs (n = 33)		Total (N = 76)	
	M	SD	M	SD	M	SD
Importance of research						
Why we do research	3.67	0.75	3.70	0.81	3.68	0.77
Sites where research is conducted	3.25	0.91	3.30	0.95	2.57	0.96
Attitudes toward research	3.83	0.99	3.55	0.94	3.29	0.92
Research in kinesiology and physical education	3.31	1.02	3.06	0.89	3.71	0.97
Research in subdisciplines of kinesiology and physical education					3.21	0.97
Reading and locating research						
How to read a research article	4.16	0.78	3.89	0.93	4.04	0.86
How to use the library	3.88	1.00	3.67	1.05	3.79	1.02
How to search for the literature	4.11	0.88	3.97	1.04	3.98	0.98
How to critique research articles					4.05	0.95
Planning research						
Ethical issues in research	3.47	0.85	3.52	0.87	3.49	0.86
Finding a topic	3.95	0.92	3.76	0.75	3.87	0.85
Writing a literature review	4.05	0.72	3.79	1.02	3.93	0.87
Writing a thesis or dissertation proposal	4.02	1.08	3.76	1.25	3.91	1.16
Resources for funding research	2.02	0.83	2.30	1.16	2.14	0.99
Writing a grant proposal	1.90	1.02	2.38	1.31	2.11	1.17
How to plan a pilot study	3.09	1.09	3.00	0.90	3.05	1.01
Designing and analyzing research						
Measurement issues						
Levels of measurement	3.59	1.02	3.27	0.86	3.44	0.97
Norm referenced reliability and validity	3.30	1.17	3.09	0.98	3.21	1.09
Criterion referenced reliability and validity	3.23	1.15	3.00	1.15	3.13	1.15
Sampling	3.93	0.88	3.79	0.82	3.87	0.85
Design issues						
Reliability and validity for quantitative research designs	3.95	0.93	3.95	0.93	3.91	0.96
Reliability and validity for qualitative research designs	2.94	1.12	3.05	1.05	3.01	1.09
Descriptive research designs	3.60	1.07	3.55	0.94	3.58	1.01
Simple correlational research designs	3.74	0.80	3.36	1.03	3.57	0.92
Advanced correlational research designs using multiple regression	2.74	1.27	2.42	1.12	2.60	1.21
Advanced correlational research designs using structural equation modeling	1.46	0.67	1.59	0.80	1.52	0.73
Experimental and quasiexperimental research designs	3.81	1.16	3.94	1.00	3.87	1.09
Repeated measures research designs	3.49	1.08	2.94	1.03	3.25	1.08
Meta-analysis	2.55	1.09	2.45	0.90	2.51	1.01
Multivariate research designs	2.66	1.21	2.36	1.08	2.52	1.11
Interpretive and ethnographic research designs	2.20	1.08	2.18	0.98	2.19	1.03
Case study research	2.38	0.99	2.27	0.76	2.33	0.89
Critical theory research	1.88	1.03	1.67	0.69	1.79	0.90
Historical research	2.28	0.88	2.00	0.90	2.16	0.90
Philosophical research	1.93	0.81	1.70	0.81	1.83	0.81
Specific data collection techniques	3.53	0.93	3.07	1.20	3.34	1.07

Importance of research

How to read a research article

Design & analysis

Design issues

Analysis issues

Overview and the general purpose of statistics (conceptual)	3.65	1.17	3.45	1.23	3.57	1.19
Conceptual issues in statistical hypothesis testing	3.58	1.20	3.53	1.14	3.53	1.14
Conceptual issues in power analysis and sample size	3.00	1.21	3.00	1.21	3.00	1.21
Conceptual overview of descriptive statistics	3.37	1.23	3.33	1.16	3.36	1.20
Conceptual overview of correlational statistics	3.37	1.16	3.15	1.12	3.28	1.14
Conceptual overview of experimental statistics	3.56	1.20	3.30	1.10	3.45	1.16
Conceptual overview of advanced or multivariate statistics	2.49	1.18	2.06	1.00	2.30	1.12
Calculations of descriptive statistics	2.44	1.44	2.18	1.24	2.33	1.35
Calculations of correlational statistics	2.44	1.39	1.97	1.10	2.24	1.28
Calculations of experimental statistics	2.42	1.42	1.94	1.12	2.21	1.31
Calculations of advanced or multivariate statistics	1.56	0.98	1.39	0.61	1.49	0.84
Analysis of field notes	1.49	0.86	1.33	0.60	1.42	0.75
Analysis of interview data	1.79	0.86	1.61	0.75	1.71	0.81
Advanced analysis of interpretive and ethnographic data	1.49	0.86	1.21	0.42	1.37	0.71
Analysis of data using a critical theory perspective	1.40	0.79	1.24	0.44	1.33	0.66
Disseminating research						
How to completing the thesis or dissertation	3.63	1.13	2.94	1.27	3.33	1.24
Presenting research	3.40	1.16	3.21	1.19	3.32	1.17
Writing a research abstract for presentation	3.00	1.18	2.88	1.16	2.95	1.16
Writing manuscripts for peer reviewed journals	2.49	1.08	2.52	0.94	2.50	1.01
Revising manuscripts based on comments of reviewers and editors	1.93	1.14	2.00	1.17	1.96	1.15
Writing response letter to the editor to accompany revised manuscript	1.47	0.88	1.45	0.87	1.46	0.87

Note: Values are means and standard deviations. Higher values indicate a heavier emphasis.

Summary

The data from this study suggest that research methods instructors emphasize a large number of topic areas, they are experienced, and most are productive scholars. They, however, have not placed a similar emphasis on new methodologies as on more established methods and may rely heavily on traditional teaching techniques. If students are to meet the stated objectives, then classes will need to be modified so students are more conversant with a variety of methodologies and feel comfortable reading and critiquing it in the literature. The research literacy of students in our field will be a part of how research is generated and applied in the future.

Must emphasize
new research
methodologies!

Brief Research History of Selected Subdisciplines – Motor Behavior

Quest 2006, 58, 112-127

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Motor Behavior: From Telegraph Keys and Twins to Linear Slides and Stepping

Jerry R. Thomas

Motor behavior is a significant area of scholarship with 64 Fellows from the American Academy of Kinesiology and Physical Education engaged in that work since 1930. This paper provides a brief overview of the history of research in motor development and motor control/learning, particularly noting the contributions to scholarship of Academy Fellows. Specifically, Academy Fellows who are frequently cited are highlighted as are the highly cited papers. In addition, significant books authored and edited by Academy Fellows from motor behavior are listed.

Brief Research History of Selected Subdisciplines – Sport Psychology

Quest 2006, 58, 128-159

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Smocks and Jocks Outside the Box: The Paradigmatic Evolution of Sport and Exercise Psychology

Robin S. Vealey

The objective of this article is to describe the historical development of sport and exercise psychology, with a particular emphasis on the construction and evolution of the “box” through history. The box represents the dominant paradigm that serves as the model for research and application as it evolves through successive historical eras (Kuhn, 1962). Seven historical eras related to the development of sport and exercise psychology are discussed. Of particular interest for this review were individuals whose curiosity and motivation established the roots for the study of sport and exercise psychology, as well as the controversies and tensions in both kinesiology and psychology that shaped the field. Suggestions for the future include a problem-based approach to scholarship and a cultural praxis version of sport and exercise psychology to enhance relevancy and social impact.

Brief Research History of Selected Subdisciplines – Sport Sociology

Quest 2006, 58, 71-91

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Sociology of Sport: Expanding Horizons in the Subdiscipline

Janet C. Harris

Sport sociology . . . is a value-free social science. It is not an effort to influence public opinion or behavior, nor is it an attempt to find support for the “social development” objective of physical education. . . . The sport sociologist is neither a spreader of gospel nor an evangelist for exercise. His function is not to shape attitudes and values but rather to describe and explain them. (Kenyon & Loy, 1965/1969, p. 38)

The replication of so called scientific studies of sport have done little to enhance either our knowledge or understanding of the nature and meaning of sporting practices. By separating sport from its developmental and social features, the “variables” approach completely ignores the sociohistorical and political dimensions of cultural life. (Hollands, 1984, p.70)

Scholars on the forefront of the sport/cultural studies movement have emphasized that its fusion of perspectives carries the promise of developing a comprehensive model to analyze relations of dominance and subordination simultaneously contoured along class, race, and gender lines (Sage, 1997a, p. 333)

It would . . . seem wholly appropriate for the sociology of sport to use post-structuralist thought as a vehicle for excavating the discursive formations, and allied subjectivities, of contemporary sport culture. (Andrews, 2000, p. 116)

Brief Research History of Selected Subdisciplines – Exercise Physiology

Quest 2006, 58, 92-111

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Exercise Physiology and the Academy: Contributions to Physiological Concepts and Biological Systems During the Commemorative Years

Charles M. Tipton

To determine the contributions made by Academy Fellows during the past 75 years to concepts within the body of knowledge associated with exercise physiology, a literature search was undertaken. Of the charter Fellows, Hetherington and eight others (34%) were identified. Schneider in 1933 was the first of 18 Fellows who became authors, co-authors, or editors of exercise physiology textbooks for students in physical education or kinesiology. Of the 2005 membership, 21% were recognized as making one or more contributions to select concepts or to functions of biological systems. In rank order, the concerns were physical fitness assessment and guidance, gender responses, hormonal influences, thermal effects and thermoregulation, aging alterations, stress testing and the exercise training of individuals with cardiac risk factors, and body composition evaluation and guidance. Although few in numbers, Fellows of the Academy have also investigated the molecular biology of gene expression, characteristics of the genome, as well as changes within skeletal, connective, and immune systems.

Brief Research History of Selected Subdisciplines – Philosophy/PE

Quest 2006, 58, 60-70

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Morality, Medicine, and Meaning: Toward an Integrated Justification of Physical Education

Sigmund Loland

What are the values of physical education (PE)? What is its meaning and possible significance to the individual and society? Should PE be part of a standard curriculum in the education of the young? If so, why? These questions are calls for a justification of PE, which is a socio-cultural construction created by people for people and on the basis of particular human goals and values. Reflection over such views is the topic of this paper. More specifically, the paper presents a critical review of what can be considered three ideal-typical justifications of PE: the justifications from morality, health, and meaning. In a final section, a proposal is made for an integrated justification restating and relating these justifications into a consistent whole.

Brief Research History of Selected Subdisciplines – Education/Pedagogy

Quest 2006, 58, 41-59

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Curriculum: Forming and Reshaping the Vision of Physical Education in a High Need, Low Demand World of Schools

Catherine D. Ennis

This paper highlights events and issues in the development of physical education as a school subject. From the origin of physical culture in the German and Swedish "Battle of the Gymnastics Systems" to the advent of the New Physical Education in 1927, physical education curriculum has been a contested terrain. This remains true today as physical educators must compete for school funding and other resources with highly valued subject areas. Unfortunately, serious contextual constraints continue to hamper the efforts of highly motivated, effective physical educators to teach physical education content in schools. Perhaps in the future, better opportunities can be found in other venues where physical education can one day be perceived as a high need, high demand priority for children and their families.

Article Critique - Objectives

- Develop an ability to critically evaluate the strengths and weaknesses of scientific research
- Evaluate each article you read in a manner that assesses and pinpoints strengths and weaknesses
- Evaluate appropriateness of the methodologies used
- Determine if the hypothesis follows from the literature review
- Determine if the authors “generalized past their data”


Article Critique/Analysis of Research - Tips

- Hypothesis: Clearly stated? Does it make sense in the context of other recent articles? Do the authors support their hypothesis with other research (i.e. does the hypothesis evolve out of other work)?
- Quantitative Methodology:
 - Adequate sample sizes (for statistics and in relation to the type of sampling)?
 - Were statistics used appropriate?
 - Appropriate type of study?
 - Was there a “better” way to do this?
 - Were controls used? Were they effective?
 - Does the study pay careful attention to ethical issues.

Article Critique/Analysis - Tips

- Qualitative Methodology:
 - Adequately explain the value of utilizing a particular methodology?
 - Lay out a theoretical foundation for investigating the research topic?
 - Utilize extensive review of literature to provide rationale for investigation?
 - Determine the extent to which qualitative methods are appropriate given the evaluation's purposes and intended uses.

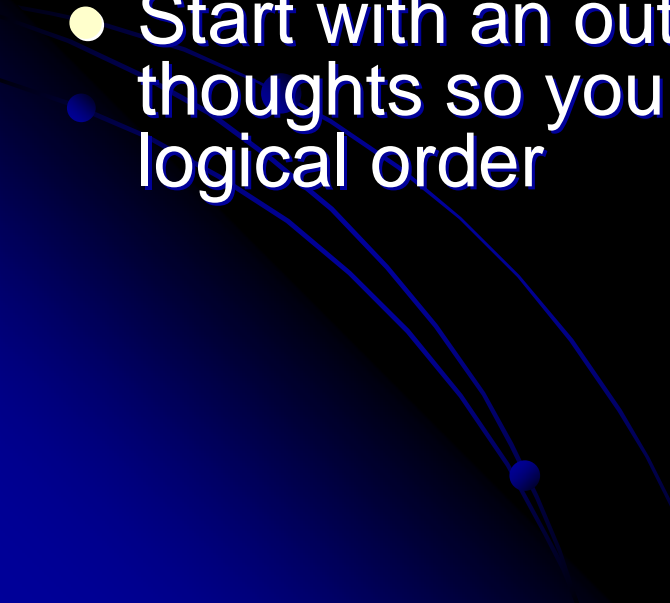
Article Critique/Analysis - Tips

- Are qualitative design strategies, data collection options, and analysis approaches based on the evaluation's purpose?
 - Does the study pay careful attention to ethical issues?
 - Has the data been analyzed so that the findings are clear, credible, and address the relevant research questions and issues?
- 

Article Critique/Analysis - Tips

- In general:
 - Results: Were results presented in an adequate manner?
 - Were tables and figures used when appropriate?
 - Were tables and figures clear and unambiguous?
 - Did the results presented address the hypothesis?
 - Discussion: Were the results restated concisely
 - Did the authors address all the results?
 - Did they appropriately interpret their results?

The Article Critique Write Up

- Read the article through several times. Make notes about strengths and weaknesses that are obvious on your second, third and/or fourth read through. Also make notes of areas you are not familiar with in order that you can investigate ideas more thoroughly
 - Start with an outline. Outlines help to organize your thoughts so you can present them in a clear and logical order
- 

The Article Critique Write Up

- Edit: it is very important that you edit your writing. It is often helpful to get someone else to read your essay for you, others can often pick out where you can improve clarity and strength of argument
- You should be trying to avoid: jargon, ambiguity, wordiness, poor grammar and poor spelling. It can also be helpful to finish the first draft several days before the essay is due in order that it can be put aside for a day before you edit it 😊
- Please do not just list the strengths and weaknesses of your paper