



Gampaha Wickramarachchi University of Indigenous Medicine

Faculty of Indigenous Health Sciences and Technology

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Continuous Assessment

BSYP 41042- Research Methodology

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ABIJUDE A.A

1. Bartlett, R., Wheat, J., & Robins, M. (2007)

Reference

Bartlett, R., Wheat, J., & Robins, M. (2007). Is movement variability important for sports biomechanists? Sports Biomechanics,

Sports Biomechanics, the unit of analysis in this article is individual athletes' movement patterns, which can be determined through repeated motion-capture trials that investigate variability. The main constructs are movement variability, coordination, and biomechanical efficiency. Although the study in question is conceptual and synthetic, rather than experimental in nature, the discussion utilizes quantitative variables like joint angles, force profiles, and intra-individual variation. The philosophy of research implied here is post-positivist, whereby the authors recognize objective measurement but also stress the complexity and non-deterministic character of human movement. Ontologically, the very notion of movement reality is taken to be multi-factorial and probabilistic, not fixed or linear. Scientific-empirical epistemology underlies the measurement-based reasoning while allowing room for theoretical interpretation. What follows from the above analysis is that this article exemplifies how biomechanics combines positivist precision with ecological understanding and how such an attitude provokes practitioners to revise their traditional reductionist approaches.

2. Weston, M., Siegler, J., Bahnert, A., McBrien, J., & Lovell, R. (2015)**Reference**

Weston, M., Siegler, J., Bahnert, A., McBrien, J., & Lovell, R. (2015). Skill-specific conditioning in professional soccer. *Journal of Sports Sciences*,

The unit of analysis is professional soccer players, identifiable from repeated performance tests and GPS-based monitoring. Key variables include heart rate, high-speed running distance, accelerations, and perceived exertion, reflecting physiological and performance concepts. This quantitative design aligns with a positivist research philosophy, assuming that physical performance can be objectively measured and generalized across contexts. The ontology assumes that soccer performance is a real, measurable phenomenon governed by physiological laws. The epistemology is objective-empirical, relying on numerical data collected using standardized instruments. By using skill-specific drills, the authors reveal the methodological challenge of combining ecological validity with measurement control. The article effectively demonstrates how conditioning research balances laboratory precision with sport-specific relevance, showing clear methodological alignment with positivism.

3. Mujika, I., & Padilla, S. (2003)

Reference

Mujika, I., & Padilla, S. (2003). Scientific bases for precompetition tapering strategies. *Medicine & Science in Sports & Exercise*,

Individual endurance athletes are the primary focus of tapering research as indicated by a review of studies related to tapering methods and their effects on physiology. The article defines several constructs associated with the taper process including training load, recovery and performance adaptations; while the article also describes numerous variables used to investigate these constructs including VO₂max, strength, hormonal markers and performance times. The research philosophy is primarily positivist in nature, given that the authors have synthesized findings from controlled experimental studies with physiological principles. The assumption made in this research was that biological mechanisms govern an individual's athletic performance consistently regardless of other conditions. The authors have provided systematic measurements and statistical comparisons as the epistemological basis for the knowledge presented in the article. By using multiple controlled research studies, the methodological strength of the article is related to the development of tapering recommendations. This is in line with the traditional approach of sports physiology to develop laws or theories through rigorous methods of inquiry.

4. Côté, J., Baker, J., & Abernethy, B. (2007)

Reference

Côté, J., Baker, J., & Abernethy, B. (2007). Practice and play in the development of sport expertise. Handbook of Sport Psychology,

A longitudinal study was conducted on the individual developmental path of athletes, through retrospective methods. Two key themes were analyzed: deliberate practice, and physical development (growth) through playing sports, acquiring skills, and becoming an expert. This research is a mixed focus concept that incorporates both qualitative and quantitative methods of study. Due to this, the number of variables used to measure development differ among studies; however, there are some general similarities such as training volume, age at which to specialize, and success (measurable results) of training (performance). The research approach for this study is interpretive along with post-positivist, and allows for the identification of measurable trends as well as the subjective experience of each athlete. From the standpoint of ontology, this research views growth and development of athletes as an evolving process, rather than a strict path. Epistemologically (knowledge), we believe that the best knowledge of athletes can be obtained by combining the regularities of statistics with their interpretive knowledge. Using both of these methods can lead to a more effective understanding of expertise than relying solely on quantitative data.

5. Halson, S. L. (2014)

Reference

Halson, S. L. (2014). Sleep in elite athletes and the impact on performance. Sports Medicine,

The analysis of the elite athlete's sleeping and recovery patterns are based on actigraphy, sleep diary and physiologic measures as the main focus of the unit of analysis. Overall Constructs: Sleep Quality; Recovery; Fatigue; Performance Readiness. The variables are defined as follows: Total Sleep Time; Sleep Efficiency; Cortisol Levels; Perceived Fatigue. The philosophical framework for the empirical synthesis and review is based on Positivist Biomedical Philosophy, which assumes that the human body functions according to predictable physiological mechanisms. Ontology has been defined by the assumption of a biologically based Sleeping Pattern having a direct effect on Physical Performance; Epistemology of this Study is based on Objective Data and Validated Instrumentation with Empirical Evidence for Knowledge and Understanding Supporting Knowledge through Empirical evidence. This article presents an extensive methodological consistency between Physiological Measures and Performance Outcome Measures, demonstrating the importance of Quantifiable Recovery Indicators for Elite Sports.

6. Jones, M. I., & Standage, M. (2006)**Reference**

Jones, M. I., & Standage, M. (2006). Psychological responses to injury in athletes. *Journal of Applied Sport Psychology*,

Injured Athletes are the subject of analysis, as defined through interviews and psychological questionnaires. Constructs considered include stress, loss of identity, motivation and ways of coping. Quantitative sections will focus on two variables, namely scores for mood state and rehabilitation adherence. Qualitative sections will reflect an interpretivist philosophy reflecting that the experience of injury is subjective, with social constructs as well as environmental context shaping the way the injured athlete makes meaning of their injury. The ontology reflects how psychological responses arise from what an injured athlete makes meaning of; this can be influenced by internal factors (the athlete's own experience) or external factors (how their environment interacts with their experience). The epistemology of the qualitative data reflects that knowledge is co-constructed; therefore interview-based interpretations are built on collaborations between researchers and participants. Although the qualitative data incorporates co-constructed knowledge, it incorporates psychometrically validated tools using a post-positivist approach, resulting in added rigor. As demonstrated by this article, integrating quantitative and qualitative methods provides an opportunity to better capture psychological changes occurring post-injury as well as to explore and gain a deeper understanding of the true experience of the injured athlete.

7. Gamble, P. (2006)

Reference

Gamble, P. (2006). Periodization of training for team sports. *Strength and Conditioning Journal*,

In the research, team-sport athlete training cycles represent the unit of measure, with rugby and other field sports providing concrete examples. Among the constructs studied are: periodization, load management, recovery and adaptation to performance. The research is mainly conceptual, but draws upon existing empirical research which has researched variables such as training volume, intensity, fatigue markers and other athletic performance measures. Philosophically, the authors adopt a post-positivist viewpoint that accommodates both science-based training concepts and variability of contexts. From an ontological viewpoint, athletic adaptations are considered to be biophysiological; however, they are impacted by sport specific and other types of environmental conditions*. The authors also place value on empirical data as a source of information, but also on the value of coaching experience, suggesting that the information regarding performance cannot be defined solely by strict measures. These elements enhance the ecological application of training periodization.

8. Rowe, K., & McKenna, J. (2001)**Reference**

Rowe, K., & McKenna, J. (2001). The psychological impact of career-ending injury in professional sport. *Psychology of Sport and Exercise*,

The subjects of this research document are professional athletes suffering from a career-ending injury as established through the qualitative data gathered from interviews. Construct themes for this research document include identity loss, grief, emotional trauma, and transition from professional athletics. This research is considered qualitative interpretive; thus, the constructs in this paper are not quantified numerically but rather grouped together according to the themes identified. The authors have an interpretivist philosophy, which means that they believe that the information included in this research document is subjective and constructed through personal narratives of each participant. With regard to ontology, the authors believe that a sustained injury is a particular experience that has individual psychological consequences, and not a general universal experience. Furthermore, the authors consider that the creation of knowledge occurs through the relationship between the participant and the researcher; hence, the authors consider the process of creating meaning is a co-created process. The methodology of this research study closely follows the authors' interpretive approach providing a detailed understanding of how being forced to retire early from sport affects the psyche of the former athlete.

9. Impellizzeri, F. M., Rampinini, E., & Marcora, S. M. (2005)**Reference**

Impellizzeri, F. M., Rampinini, E., & Marcora, S. M. (2005). Physiological determinants of aerobic performance in soccer players. Sports Medicine,

Soccer players' aerobic ability is used as a means of identifying the performance of their aerobic fitness using laboratory and field performance tests. The aerobic ability of the player will be defined as Aerobic Ability, lactate threshold and Aerobic Performance. The various Types of Aerobic Ability that can be derived from the assignments of Time to Exhaustion, VO2 max and Lactate Concentration will be used for evaluating players' performance abilities. The methodology used during the research has been based on the positivistic research philosophy, based on objective laboratory and controlled experiments to measure, research, and control for the biological aspects of the player. The biological aspects of aerobic performance have been defined ontologically by using laboratory equipment and by creating knowledge through the empirical laws of sports physiology. The article establishes a high degree of methodological rigor through the synthesis of the results of controlled experiments and through the correlation of the individual physiological markers with the performance outcomes of the player.

10. Shaw, S., & Hoeber, L. (2003)**Reference**

Shaw, S., & Hoeber, L. (2003). "A strong foundation for the future"? Analyzing constructions of gender in sport organizations. Sport Management Review,

The analysis unit consists of documents and discussions within sports organizations. Various constructs can be examined like gender representation (e.g., equity of representation), organizational culture, etc., as they relate to these types of data. The critical-discourse framework allows for a qualitative analysis of these constructs without the use of variables; rather, only interpretive constructs are utilized. Critical interpretivism serves as a foundation for this type of research philosophy, which involves an investigation into power relationships and social constructions of meaning. Thus, based on the way that institutional structures shape gender, this study treats gender ontologically as a socially constructed reality. Epistemological perspectives pertaining to the acquisition of knowledge through reasons for agreement or disagreement (i.e., how and why language creates/supports or undermines patterns of inequality) are the basis for this study's methodology that provides insight into structural gender issues in sports organizations.