

LOCATING, INTERPRETING AND DESIGNING RESEARCH-BASED PRACTICES: HOW CAN COACHES BENEFIT?

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ABSTRACT:

Coaches continue to seek valid and reliable information based upon sound research conducted to improve athlete performance. Sport scientists seek to find consensus involving evidence so that coaches and athletes can improve performance safely. In many cases, locating the appropriate study is difficult. One investigation is not generally enough to spin coaches' directions on an issue. The methods portion of a paper will provide detailed information about those who participated in the investigation. A good study involving physiological or strength training performance parameters, for example, will typically have an experimental and a control group. Generally, all participants are tested at the beginning of the investigation (pre-test) to determine a baseline before any intervention is conducted. Interpretation can be overwhelming, but there are simple ways to interpret the results into meaningful information. The answer to the research question involved in the study is considered the conclusion. Coaches need to have a basic understanding of research-based evidence that can enhance their knowledge, coaching techniques and strategies and, ultimately, their professional credibility and indispensable role in athlete success.

Introduction:

Coaches continue to seek valid and reliable information based upon sound research conducted to improve athlete performance.

The availability of research-based practices for coaches not only serves in athlete safety and prevention of injuries, but also enhances athlete learning and

performance (Goslin & Kluka, 2019).

Coaches find an overwhelming amount of information on the internet or in magazines that can be either intentionally deceiving to boast a product or research investigation that is difficult to interpret and apply.

Sport scientists seek to find consensus involving evidence so that coaches and athletes can improve performance safely.

Coaches must interpret the evidence and apply it in practice. This, in many cases, is the ultimate challenge for coaches.

How can research-based practices be located, interpreted, and designed, resulting in improved athlete performance? This article is designed to assist coaches in designing appropriate practices that are rooted in sound sport science research.

Locating the study

In many cases, locating the appropriate study is difficult. Simply because an article is found that uses the words, "...university research studies show..." does not necessarily mean that studies were peer reviewed before publication.

There is also much information published in a variety of languages other than English (i.e., Chinese, Russian, Spanish, French).

Good sources for finding research abstracts include PubMed

(www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=PubMed), Medline (www.nlm.nih.gov/tsd/serials/lji.html), EBSCO (www.ebsco.com and www.ejournals.ebsco.com), Physical Education Index (www.educationindex.com/physical).

The complete study may not be available without charge. The abstract, however, may provide sufficient information to determine the quality and application of the results as well as the conclusion of the investigation. Another idea is to search for studies that involve meta-analysis.

In these investigations, researchers combine the results of many studies into one large one and draw conclusions.

Interpreting results

One investigation is not generally enough to spin coaches' directions on an issue. If hundreds of juried researchers have found consensus on an issue, and one has refuted the issue, this is

not sufficient reason to pursue another line of thinking.

It may also be possible that a study sponsored financially by a corporation with a vested interest in the results may show only a positive effect.

This does not always mean that the study is invalid; it simply means that the results might be taken lightly.

Participants

The methods portion of a paper will provide detailed information about those who participated in the investigation. Several questions need to be considered about them:

How much did the athletes train? What level of competence are the athletes? What type of training did the athletes do prior to the study? How long were the participants involved in the study? How many participants were in the study?

Methodology

A good study involving physiological or strength training per-

formance parameters, for example, will typically have an experimental and a control group. The experimental group (EG) will have some type of treatment or condition that the control group (CG) will not. For example, the EG will have some type of circuit training added to practice, while the CG has only practice.

Participants should be randomly selected to the EG or CG. Through random assignment, all participants have equal chances to be in either group. There needs to be a sufficient number of participants (usually 30) per group so that a few who improve greatly do not skew the results, as most studies look at averages between EG and CG. This, again, is why selecting only one study from sport science literature needs to be compared with the body of evidence for appropriate interpretation.

Studies without a CG show little certainty that an intervention was cause for improvement.

When working with athletes, it is difficult to have a CG. It is, however, sometimes challenging to inform one set of athletes that

they will receive an intervention while the other group does not.

The intervention (or lack of) may interfere with training and lead to poor performance.

Intervention effect

Generally, all participants are tested at the beginning of the investigation (pre-test) to determine a baseline before any intervention is conducted. The groups are again tested, using the same testing protocol, at the end of the study (post-test).

In some cases, participants are tested during the study (repeated measures). Good studies usually include practice trials so that participants get accustomed to protocol.

In some investigations, something novel (i.e., 3-ball juggling) or unfamiliar (skipping backwards) might be used to assess pre and post-test performance. Selecting protocol of testing also has an effect upon results.

Protocol may have little to no real-world relevance. For example, athletes may be asked to par-

ticipate to exhaustion, while competition never requires participation to exhaustions under similar circumstances.

Interpretation of results

Interpretation can be overwhelming, but there are simple ways to interpret the results into meaningful information. Researchers often refer to a p-value (Kluka & Love, 2009).

The p-value involves the odds of something occurring if it happened by chance. A p-value of less than 0.05 ($p < .05$) means that there is less than a 5% chance of the result happening by chance.

Using a previous example involving circuit training as an intervention, $p = 0.023$ means that there is only a 2.3% chance of the effects of circuit training as an intervention happening by chance.

This means there is 97.7% likelihood that the circuit training made a positive significant difference in the athlete's training.

When elite performance is considered, however, ms or mm might make the differences be-

tween first and fourth places. If the p-value exceeds 0.05, it may still be worth investigating the results based upon individual scores.

Looking at individual results may be of benefit as well. Most researchers report group averages. Some individuals improve more than others, and some may not improve at all in the EG.

Conclusion

The answer to the research question involved in the study is considered the conclusion. The conclusion indicates findings of the study.

General trends that have been determined and/or emergence of commonalities or differences may be reported as well.

Synopsis

Coaches need to have a basic understanding of research-based evidence that can enhance their knowledge, coaching techniques and strategies and, ultimately, their professional credibility and indispensable role in athlete success.

As coaches grow in their expertise, practice sessions that are also based on sport science research must be designed. The coach who can locate, interpret and design sport science research-based practices will be able to grow exponentially with athlete and sport performance demands.

Applications

Whatever coaches consider and utilize in practice planning needs to be explained based upon research-based evidence (Kluka, 2019). The role of the coach in the progressive development of skilled sport performance in athletes is paramount.

The environment that is created by the coach during the sport experience is vital to learning that exhibits itself through performance.

It is, therefore, important for coaches to understand processes that govern motor skill acquisition that are based upon science, supporting learning and performance success. Practices must include elements of exercise

physiology, motor behavior and biomechanics in logical progression in order to acquire optimum environments for learning.

References

EBSCO. (2019). www.ebsco.com; www.ejournals.ebsco.com.

Goslin, A. E., & Kluka, D. A. (2019). International sport business management. In *Perspectives: Managing sport across borders*. London: Routledge.

Kluka, D. A. (2019). Motor learning and control for performance success. *Funda-*

mentals of coaching for sport performance. London: Routledge.

Kluka, D., & Love, P. (2009). Haag, H. (Ed.). 2nd edition. Book reprinted in Spanish. In *Research methodology for sport and exercise science*. Chapter 11: Numerical strategies of data analysis (statistics). London, UK: Sage Publishing.

Medline. (2019).

www.nlm.nih.gov/tsd/serials/lji.html.

Physical Education Index. (2019). www.educationindex.com/physed.

PubMed. (2019).

www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=PubMed.