

Review of Dissertation Thesis

Palacký University Olomouc – Faculty of Physical Culture

Title:	Biomechanical Factors Contributing to the Volleyball Spikes Success Rate among Young Elite Volleyball Players
Author:	Mgr. Javad Sarvestan
Reviewer:	Prof. PaedDr. Michal Lehnert, Dr.
Reviewer's affiliation:	FTK UP, Katedra sportu
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Please, assess the dissertation thesis using the following criteria. Provide specific comments respecting the research focus of the dissertation thesis.

1 Is the topic up-to-date? Is the work original?

The topic of the dissertation thesis pertained to the Sport and Fitness Sciences and closely follows the current knowledge in the researched issues. The core of the dissertation thesis are four chapters containing original studies previously published in journals indexed on WoS database. In all of them, the applicant is the first author. These original studies focus on finding the main contributors to the volleyball spike success rate in youth elite players and follows each other logically. The chapters with studies are supplemented by the chapters *Introduction* (includes overview of the current knowledge and also the goals, research questions and hypotheses), *Discussion* and *Conclusion*.

2 Does the introduction part of the thesis provide sufficient background and overview of the up-to-date literature from an international perspective?

The content, scope and structure of the chapter Introduction meet the requirements for dissertation work. The chapter, together with the contents of the introductory parts of the integrated studies, provides overview of the current literature and creates an appropriate basis for the formulation of the research questions, objectives and hypotheses.

3 Was the study properly designed? Were adequate research methods and techniques used?

The studies included into the thesis are of the observational character. The studies are properly designed, and adequate and up-to-date research and statistical methods are used. The data collection is described in detail, except of studies no. 3 and no. 4, where more detailed information about types of sets and location of spikes execution on the court is missing. This all together allowed verification of the formulated hypotheses. In the presented studies, lower number of players ($n = 13$) is measured, however, it has to be considered, that the players of the national level were hired for the purpose of presented studies.

4 Were the objectives stated properly? Were they met?

The objective of the thesis as well as specific objectives of the individual studies were set based on detailed analysis of current knowledge in the researched topic, were clearly formulated and finally were met conducting the research studies and presenting their findings adequately in the thesis.

5 Are the results processed and presented properly?

The appropriate data analyses were conducted and the results were well described in particular studies with respect to research questions and hypotheses.

6 Are the results interpreted and discussed appropriately? Are the conclusions well formulated?

The results of particular research studies were appropriately interpreted and discussed in the context of current knowledge, while the author showed an excellent orientation in the researched area. I appreciate that the author pays attention to the limitations of the research in the chapter 3 of the thesis (*Discussion*). Nevertheless, in this chapter, I would expect discussion which would surpass the focus and content of discussions in individual studies, and which would reflect research topic solved in the doctoral dissertation as a whole. Instead, the chapter repeats the information, although frequently re-formulated, already presented in discussion sections of particular studies. Therefore, the chapter does not bring new perspective to the research findings. Subsequently, adequate conclusions of the doctoral thesis are presented. Nevertheless, I would appreciate if the conclusions were more extensive and contained conclusions for the research field and conclusions for sports practice, formulated separately. I would also appreciate if the perspective of future research was indicated.

7 Are the results usable in practice?

The results of the thesis are useable in volleyball training practice, especially in technique training, however, limitations of the research have to be considered.

8 Is the work clear and logically structured?

Given that the core of the work consists of four published studies focused on the issue of volleyball spike technique, the thesis is well structured. In my opinion, the presentation of the objectives, research questions and hypotheses in a separate chapter would contribute to the better clarity of the thesis.

9 Is formal processing, language, and stylistic level of the work appropriate?

From the formal point of view, there is an acceptable amount of flaws in the thesis (e.g. difference between the numbering of chapter 1.2 in the content and the text structuring; chapter 1.4 pg. 16, numbering plus bullet points). Further, the author did not provide an overview of abbreviations in the thesis, which, due to the number of abbreviations used, makes orientation in the thesis difficult. In some cases, references are made to studies that do not primarily deal with the given topic (this also applies to referring to the author's already published studies), and/or references are also given together for several sub-problem areas (primarily in chapters *Introduction*, *Discussion* and the 1st study).

10 What is the contribution of the work? Please identify the strengths of the work.

Compared to previous studies, the advantage of the presented already published studies is higher ecological validity (creation of game-like conditions). Findings of the studies contribute to the current knowledge and bring new detailed knowledge especially about kinetic and kinematic factors influencing the success of the volleyball spike. Thus, they are of relevance to the field of Sport and Fitness Sciences and to the sport practice. Nevertheless, it should be considered that findings of presented studies might not be generalizable to other volleyball teams. Among the strengths of the work, it is appropriate to mention the progressive methods used for data collecting and processing, as well as the fact that the author is aware of the limits of individual studies and of the entire research presented.

11 What are the weak points of the work? Please identify the weaknesses if any.

Due to the duplicity, I consider the content of the *Discussion* chapter to be the main weakness of the work (see comments in section 6 of this review). In the *Summary*, information about the inclusion of four studies into the thesis and about applied methodology is missing.

12 What are your suggestions and questions that should be discussed during the defense of the dissertation thesis?

1. In the Conclusion, you mentioned: "*Thus, it could be claimed that reaching to the minimum required jump heights is enough for executing a successful spike performance, as the upper-limb roles would be more visible in success rate when the attacker is in the air*". What do you mean by "the minimum required jump heights"?
2. In the studies 2 and 3, I could not find detailed information about the execution of spikes. Could you specify, in which part of the front zone spikes were performed by players and after what type of set? Were these conditions the same in all the studies?
3. Could you clarify the connection between reported findings of the study 4 and "*one-size-fits-all*" training concept mentioned on pg. 56 (the 2nd paragraph)?
4. Could you indicate future directions of the research presented in the thesis?

13 What is your overall evaluation of the dissertation thesis?

Overall, the doctoral thesis represents a compact unit, in which the author deals with the kinematic and kinetic aspects of attacking in volleyball. Included studies have a high professional level, which made it possible to enrich the current state of knowledge in the researched topic. The application of the findings of the presented research can contribute to increasing the effectiveness of training process in volleyball focusing on spike technique training and its integration with fitness training.

Final recommendation: **I recommend** the dissertation thesis to be defended

Date: July 19th, 2022

Signature:


