The credibility of Instagram-based information on strength and conditioning in tennis

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ABSTRACT

Background: Social networks are an important and widely used resource for training information for many people. However, the content on these platforms regarding the recommendations for strength and conditioning in relation to tennis has not yet been fully evaluated. We investigated the credibility of Instagram-based information on the strength and conditioning development specifically in relation to tennis. **Methods:** Three experts with more then ten years of scientific and professional experience in the field of tennis (39.6±7.4 years of age) evaluated the credibility of the Instagram-based content of five selected accounts based on three aspects: information based on scientific knowledge, the practical applicability of information and the demonstration quality of the presented exercises. We calculated the means (AS) and standard deviations (SD) for each criterion. **Results:** The results of this research indicate a very low level of credibility in relation to the data published on social networks. The information is inaccurate and poorly verified, and as such is not a reliable source and selection for the purpose of strength and conditioning progress in tennis. **Conclusion:** Only validated training approaches and exercises that leverage players' fitness abilities might serve as an avenue for strength and conditioning promotion in tennis.

INTRODUCTION

Social networks have become a global trend in recent years and have greatly changed the way we communicate on a daily basis. Thus, social networks have soon been recognized as a potential promotional tool for direct communication with clients, users, and consumers. Social networks can be defined as applications that allow users to connect with each other by creating personal profiles (Kaplan & Heanlein, 2010). Dean (2020) states that currently 3.96 billion people throughout the world, which is over 50% of the population, use social networks. The average user has more than 8 profiles and spends an average of two and a half hours per day on various platforms. The increasing use of these social networks has also resulted in the fact that published information is often not based on previous scientific knowledge, so the question of credibility and practical applicability arises. This can also be down to the fact that much of the information published on these platforms is not under editorial supervision (Johnson & Kaye, 2004). Also, social networks have launched a new trend of knowledge transfer through various profiles that consider themselves competent to give advice and recommendations, these being more commonly known as "influencers". Even today, it is a known fact that there are pages of dubious relevance on the internet, one of these being Wikipedia, a general information website used by millions that can in fact be edited by anyone in the general population (Chesney, 2006; Ferreira et al, 2019). For social networks, the situation is almost the same - the content we watch is created by people who do not necessarily have the required expert knowledge related to the information that they publish. Ferreira et al. (2019) conducted a study on the reliability, accuracy and completeness of information on lower back pain in the population that can be found on the Internet. The research showed that only 43% of the processed sources have accurate recommendations regarding lower back pain and that the comprehensiveness of treatment recommendations
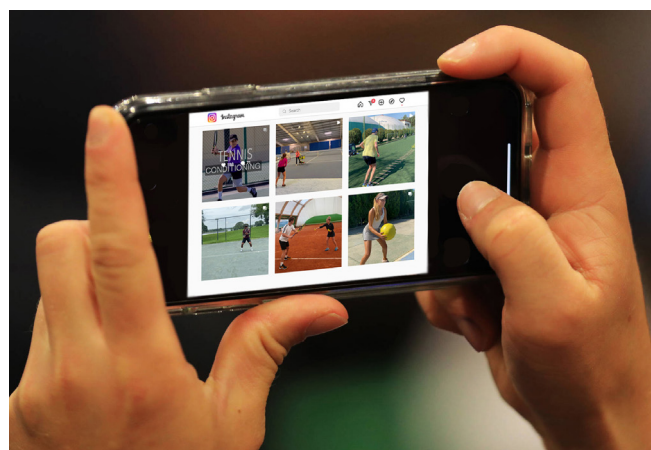
on all sites is extremely low. However, to the best of the authors' knowledge, no study has been conducted on the Instagram-based accuracy of information about strength and conditioning development in tennis. Accordingly, in this study, we investigated the credibility of Instagram-based information on the strength and conditioning development in tennis.

METHODS AND PROCEDURES

In the first phase of this research, five profiles were selected that meet the following criteria: a) profiles providing practical information related to the fitness training of tennis players, b) profiles have a minimum of 2000 followers and c) profiles are publishing information in English. After selecting 151 videos, three trained experts with more than ten years of scientific

and professional experience in the field of tennis (39.6±7.4 years of age) (one expert with PhD diploma in Kinesiology and two with master's degrees in Kinesiology (5-years of university education) evaluated the credibility of the material collected based on the following criteria:

1. Information based on scientific knowledge.

2. Practical applicability of the information.

3. Demonstration quality of the presented exercises.

For each criterion, the experts expressed their degree of agreement on a five-point Likert scale with number one denoting complete disagreement and number five complete agreement. Each expert coded independently with multiple checks for interobserver agreement, all of which were above .85. The statistical package Stata, V.12 (StataCorp, Texas, USA) was used to process the results, and the descriptive statistical parameters presented in the research below are both the means and standard of deviations.

Hypotheses:

Three hypotheses were set for this research:

- H1: Videos on the strength and conditioning in tennis posted on social media are based on scientific knowledge.

- H2: Videos on the strength and conditioning in tennis posted on social media have high practical applicability.

- H3: Videos on the strength and conditioning in tennis posted on social networks have high-quality demonstrations.

RESULTS

The mean scores of all the videos for each criterion was 3.03±1.00. Overall, the most frequently awarded rating was 3 (500) and the least frequently awarded rating was 5 (59).

Information based on scientific knowledge

The criteria item "Information based on scientific knowledge" received an average score of 3.16±0.99 based on the ratings of all the evaluators and as such is the best rated criteria within this study. The total number of individual grades per evaluator is shown in Table 1 below and the most frequently awarded grades by each evaluator are marked in yellow.

Table 1

A comparison between the total number of individual assessments for the criteria item „Information based on scientific knowledge " for all three evaluators.

INFORMATION BASED ON SCIENTIFIC KNOWLEDGE					
Rating	1	2	3	4	5
Evaluator 1	10	16	58	64	3
Evaluator 2	15	19	46	62	9
Evaluator 3	14	24	58	51	4

Practical applicability of information

This criteria item received the overall average rating of 3.03±1.04 and is slightly lower rated than the criteria item "The basis of information on scientific knowledge". The total number of individual grades per evaluator is shown in Table 2 below and the most frequently awarded grades by each evaluator are marked in yellow.

Table 2

A comparison between the total number of individual assessments for the criteria item „Practical applicability of information" for all three evaluators.

PRACTICAL APLICABILTY OF INFORMATION					
Rating	1	2	3	4	5
Evaluator 1	10	40	55	40	6
Evaluator 2	21	35	37	43	15
Evaluator 3	6	26	63	48	8

Demonstration quality of the presented exercises

The criteria item „Demonstration quality of the presented exercises" received an overall average score of 2.89±0.97 which makes it the lowest rated criteria item in this study. The total number of individual grades per evaluator is shown in Table 3 below and as in the previous tables, the most frequently awarded grades by each evaluator are marked in yellow.

Table 3

A comparison between the total number of individual   assessments for the criteria item „Demonstration quality of the presented exercises" for all three evaluators.

DEMONSTRATION QUALITY OF THE PRESENTED EXERCISES					
Rating	1	2	3	4	5
Evaluator 1	17	50	52	28	4
Evaluator 2	16	34	55	40	6
Evaluator 3	7	24	76	40	4

DISCUSSION

The aim of this article was to critically review the credibility of Instagram-based information on strength and conditioning in tennis training. Strength and conditioning recommendations for tennis training published on Instagram from trustworthy sources failed to meet our benchmarks for credibility, provided a high proportion of inaccurate or unclear recommendations, and lacked comprehensiveness. In general, the selected accounts did not provide adequate resources to independently verify the truthfulness of the information provided.

Previous research had surveyed the accuracy of information only for a specific type of prevention training (i.e., lower back pain) (Hendrick et al, 2012; Ferreira et al, 2019). In contrast to previous studies, we specifically surveyed the credibility of Instagram-based information in relation to strength and conditioning in tennis (Li et al, 2001; Butler & Foster, 2003; Hendrick et al, 2012; Black, Sullivan, Mani, 2018; Ferreira et al, 2019). Based on the findings of previous studies showing that commercial websites were mostly of poor quality, our a priori hypothesis was that non-commercial freely accessible private Instagram accounts would provide more comprehensive and accurate information compared to commercial websites (Li et al, 2001; Butler & Foster, 2003; Hendrick et al, 2012) This was not the case for many of the assessed strength and conditioning Instagram accounts.

We found a very low average score for each criterion. None of the three criteria items received an average score higher than 4.5, which we believe can be considered as a threshold for meeting a single criterion. The results of the research refuse the first hypothesis which claims that the videos published on Instagram, related to the fitness training of tennis players, are based on scientific knowledge. Although an overall score for this criteria item was the highest average rating compared to the other two criteria items, this rating does not instill confidence that the published videos are reliable and based on scientific information. Moreover, the results of the research do not confirm the second hypothesis, which claimed that videos related to the fitness training of tennis players published on Instagram have great practical applicability. This indicates that the videos are non-specific and therefore the information provided is very unsuitable for actual use on a tennis court. There is empirical evidence to the importance of sport-specific stimulus for enhancing on-court performance (Warren & Farrow, 2013; Fernandez-Fernandez et al, 2015). Something of particular concern is the very low average score for the demonstration quality of the presented exercises. Noticeably, this is the worst rated criteria item in this study. Our results refuse the third hypothesis which stated that the videos related to the fitness training of tennis players published on Instagram provide high quality demonstrations. There is empirical evidence of the effectiveness of demonstration in specifying the task, especially for children and youth, which has been shown to be of primary importance (Haguentauer et al, 2005). People learn most easily by observing at a certain action that is to be adopted, or through kinesthetic learning where they imitate a "model" that demonstrates a movement or exercise.

A high number of strength and conditioning recommendations given by selected Instagram accounts in our review were either inaccurate or unclear, which risks misleading the public. If one of the goals of Instagram-based information is to help coaches, players, medical staff and parents in their everyday practice, these sources of Instagram-based information on strength and conditioning in tennis must provide the necessary means to make informed decisions. For this to happen, improving the credibility standards, as well as providing accurate and comprehensive training recommendations is necessary.

The strengths of this study include the participation of three experts with more then ten years of scientific and professional experience in the field of tennis. Another strength involves a very high number of consistencies between the three evaluators (above .85 in interobserver agreement). One potential limitation to the study was the use and analysis of only one social platform (Instagram). Nevertheless, our choice was based on the fact that Instagram is one of the most used platforms worldwide. Another limitation involves the small number of social media accounts that were evaluated.

CONCLUSION

Selected Instagram profiles demonstrated low credibility standards, provided mostly inaccurate information, and lacked comprehensiveness across all types of strength and conditioning information they were providing in relation to tennis. Our findings highlight the need for these social media accounts to reformulate their training recommendations to reflect current evidence in tennis-related strength and conditioning. As a practical application, specific-tennis related exercises that are scientifically validated could potentially be more beneficial tennis players (i.e., sport-specific on-court drills, sport-specific reactive agility drills, neuromuscular exercises…). If used, this approach could be valuable to the coaches, athletes, and medical staff in addressing players' needs. Beneficial training should be the only the verified targeted training and exercise programs used in order to prolong and safeguard players' careers as well as improve their performance.

CONFLICT OF INTEREST AND FUNDING

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