



SUCCESSFUL YOUTH PERFORMANCE DOES NOT RELATE TO FUTURE SENIOR PERFORMANCE IN ELITE TAEKWONDO COMPETITORS

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DOI: 10.26524/1442

ABSTRACT: The purpose of the study was to analyze the prevalence of successful performance in the youth category on future senior performance in elite Taekwondo competitors. A chart analyses on the records of the World Taekwondo Federation was performed to identify winners of a medal between the 1st and 8th World Youth Championships and which ones also managed to win a medal between the 13th and 20th World Senior Championships. An 8.5% of youth athletes obtained medals at the World Championships (Males = 7.7% and Females = 9.3%, $P > 0.05$). There was a 2.1% of the athletes who won a gold medal at both, the World Youth and the World Senior Championships (Males = 1.9% and Females = 2.2%, $P > 0.05$). The low association between youth and the senior success involves consideration regarding the processes of preparation for elite Taekwondo competition in the early ages.

Keywords: talent identification; martial arts; sport specialization; sport selection; Taekwondo

INTRODUCTION

Taekwondo has made a rapid progress since its official appearance as an Olympic sport in Sydney 2000; however, it was first introduced as an exhibition sport in the Olympic Games in Seoul 1988. This sport has given birth to a significant amount of research aiming to study variables related to the performance of these elite athletes [1]. Among the performance-related variables described in the Taekwondo literature are strength [2-4], muscular power [5, 6], aerobic power [4, 7, 8], heart rate [4, 9-11], lactate [10-13] and hormonal responses [14].

Indeed, an important goal of the scientific and coaching sports community has been to identify outstanding qualities – from genetic to technical and psychological characteristics – in young athletes (i.e., talent identification) [15-19] potentially related to a higher likelihood for outstanding performance in adulthood [20-22].

Specifically for Taekwondo, it has been proposed the use of specific tests to evaluate different physical abilities such as endurance, jump power and strength endurance [23]. The potential influence of body composition, especially body height, has been highlighted as a determinant factor in the successful performance in this sport. The potential role of an athlete's experience,



psychological traits and technical capacity as contributors to a reasonable athletic performance are to be taken into consideration due to the lack of sufficient scientific evidence to support the training processes in Taekwondo.

Experience in competitions (e.g., tournaments) is critical to the success of an athlete and participation is an essential element in this process of skills acquisition. Since 1996, the Taekwondo governing body, the World Taekwondo Federation (WTF), introduced a biannual World Youth Championship, a high-level competition for youth aged 14 to 20.

Based on the hypothesis that the talent or success of a young athlete should be related to successful performance in later life, the purpose of this study was to analyze the prevalence of successful performance in youth performance to the successful performance in senior categories.

METHODS

Participants

The male and female medallist population from the 1st World Youth Championship held in 1996 and the 8th World Youth Championship held in 2010. In addition, all the winners of the World Championships Senior Category held between 1997 and 2011.

Procedures

The records of winners in the World Youth and Senior Championships posted on the official website of the WTF were retrieved and analysed. Athletes who won at least one gold, silver or bronze medal in both events were identified. The proportion of athletes who won a gold medal in both events and those who won a medal regardless of the place achieved were computed.

Statistical analysis

Frequencies and percentages of athletes winning a medal and Z-tests to compare proportions were computed using the Statistical Package for the Social Sciences (SPSS). Significance level was set *a priori* at $P < 0.05$.

RESULTS

The proportion of athletes maintaining peak performance in the transition between age categories was 8.5% for young performers achieving a medal in a World Youth Championship also ranking among the top three in World Senior Championships. Therefore, 91.5% of the athletes who had previously won a medal were unable to win a medal in a World Senior Championship. No significant differences in the proportion of males and females winning a medal were found (Table 1).

Table 1. Medal Winners at the Senior World Championship by Previous Medallists at the Youth World Championship by Gender.

| | Medallist | Non medallist | Total |
|--------|---------------|---------------|---------------|
| Gender | Frequency (%) | Frequency (%) | Frequency (%) |
| Male | 24* (7.7) | 288* (92.3) | 312 (100%) |
| Female | 29 (9.3) | 283 (90.7) | 312 (100%) |
| Total | 53 (8.5) | 571 (91.5) | 624 (100) |

Note: * $p > 0.05$ between gender proportions



When analysing only individuals winning a gold medal in both categories, 2.1% of the competitors won a gold medal in both, World Youth and Senior Championships. No significant differences in the proportions of males and females winning a gold medal were found (Table 2).

Table 2. Athletes Winning a Gold Medal at the World Youth and at the World Senior Championship by Gender.

| | Medallist | Non medallist | Total |
|---------------|----------------------|----------------------|----------------------|
| Gender | Frequency (%) | Frequency (%) | Frequency (%) |
| Male | 6* (1.9) | 306* (98.1) | 312 (100%) |
| Female | 7 (2.2) | 305 (97.8) | 312 (100%) |
| Total | 13 (2.1) | 611 (97.9) | 624 (100) |

*Note: * $p > 0.05$ between gender proportions*

DISCUSSION

The purpose of the study was to analyse the prevalence of successful performance in the youth category on future senior performance in elite Taekwondo competitors. Our hypothesis was that successful performance in young athletes should be related to successful performance in later life. We did not find a strong association between successful performance in youth on subsequent senior performance. Based on the observed performance evolution of an athlete from Youth to Senior World Championships, talent identification process should not rely on obtaining medals during competitions in youth ages.

Although the causes for the low prevalence of success when transitioning from youth to adult are uncertain at this time, our findings reinforce the developmental approach that argues that high volumes of specific training and participation in high-level competitions from an early age are not necessarily related to a better performance in elite competition in adult categories [24].

The low association between successful performances from youth to senior categories requires consideration regarding the training process for the taekwondo athletes undergoing early stages of competition. At this time, it is unknown whether these athletes continue their training process without being able to be successful as adults or simply stop competing despite having shown outstanding initial performance. It is possible that either situations are present or even a combination of both. An empirical analysis of potential factors that may be influencing this phenomenon indicates that medal winners in World Youth Championships showed significant development of their physical, technical and tactical level, factors suggestive of strict training regimens from an early age.

Personnel responsible for these young athletes must ensure an appropriate organizational environment, with proper interaction between the coach and the athlete and the efficient psychological support for the demands of training and competition. It is known that an inefficient management of these elements may contribute to burnout, a syndrome characterized by emotional exhaustion, negative physical and physiological changes, depersonalization and reduced personal accomplishment, elements capable of generating individual defection of their role as an athlete [25-27].



We emphasize as critical the environment in which the young athlete develops since different organizational factors such as training, the burden of competition, training and competition environment, travel arrangements, nutritional care, the risk of injury, the style of leadership, lack of social support, and inadequate communication channels appear to be linked to burnout in other sports [28]. In this environment, the coach guidance is of great relevance for young athletes, by establishing a strict discipline that allows the achievement of the objectives without over demanding the teenager, because the perception of a controlling coach may limit an athlete's need of competence, autonomy and relationship, psychological variables positively associated with burnout [29].

The physical and psychological requirements during elite competition can encourage perfectionism in athletes, especially for those with this personality trait. It is of outmost importance to provide professional guidance for the young athlete to successfully face the demands of elite competition based on evidence suggesting perfectionism to intrinsic motivation and demotivation, psychological traits capable of producing burnout [30-32].

Although the evidence comes from the academia and not from a sport setting, it has been reported that individuals who have personality traits that allows them to cooperate with others show less burnout syndrome than those reluctant to help others [33]. This element reinforces the importance of strengthening team cohesion and camaraderie between athletes.

Appropriate psychological support is essential for emotional stability and athletic performance. In some situations during the technical and tactical training, direct comparisons are made of an athlete with respect to other potential opponents; however, this appraisals must be done cautiously since social comparisons made regarding lower-level peers may decrease burnout symptoms, as opposed to comparisons made with higher-level peers that might encourage burnout [34].

After analysing the possible mediating elements that could affect the evolution of young athletes following talent identification, it is imperative to provide an optimal infrastructure, well-trained coaches and sports scientists, skilled and knowledgeable managers, along with a teamwork able to develop the full potential of young athletes that excel from the start of their careers [23].

In conclusion, regardless of gender, a low association between successful achievements from youth to senior elite taekwondo competitions was observed in this study. In order to identify potential causes of this pattern it is preponderant to develop studies to follow-up on the medal-winning athletes at World Youth Championships and thereby identify appropriate interventions that contribute successful performance in older categories.



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