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LETTER TO THE EDITOR

The physical profile do not predict success in alpine skiing world cup disciplines

Le profil physique ne prédit pas le succès dans les disciplines de la coupe du monde de ski alpin

Although there is a common perception that the physical profile of professional athletes may be an important conditioning factor for succeeding in many sports disciplines, including elite skiing sports [1,2], reliable evidence has been provided that success in the different alpine skiing disciplines may not be exclusively related to specific somatotype components, whilst additional factors such as aerobic power, muscle strength and biomechanical skills may play an even more important role [3]. On one side, albeit the identification of physical variables which may predict success in alpine skiing competitions is indeed crucial for guiding young athletes to the most suitable discipline, the lack of an association between physical profile and success in professional skiing sport competitions would provide a valuable support for not discouraging some athletes to engage in disciplines for which they would not be apparently suited.

Therefore, in order to investigate whether the physical profile (i.e., height, weight and body mass index [BMI]) may be a significant determinant of success in one specific alpine skiing world cup discipline (i.e., slalom, giant slalom, super G and downhill), we carried out an electronic search in the Sport Reference database and related Web resources (https://www.sports-reference.com/) to retrieve information on height, weight and BMI of the top ten most successful athletes for overall number of victories in these four disciplines. The anthropometric characteristics of the top ten athletes of each discipline were compared with Mann-Whitney test. A multiple linear regression analysis was also carried out to investigate whether height, weight and BMI could be independent predictors of succeeding in alpine skiing disciplines. The statistical analysis was carried out with Analyse-it (Analyse-it Software Ltd, Leeds, UK).

The mean (and standard deviation) values of height, weight and BMI were 1.81 ± 0.04 m, 84 ± 6 kg and 25.5 ± 1.9 kg/m^2 in slalom athletes, 1.08 ± 0.05 m, 838 kg and 25.9 ± 1.9 kg/m^2 in giant slalom athletes, 1.81 ± 0.04 m, 84 ± 7 kg and 25.7 ± 2.0 kg/m^2 in Super G athletes, and 1.82 ± 0.05 m, 88 ± 7 kg and 26.7 ± 1.9 kg/m^2 in downhill athletes, respectively. In multiple comparisons, none of these parameters was found to be significantly different among the four alpine skiing disciplines (Table 1). In multiple linear regression analysis, where the alpine skiing discipline was entered as dependent (categorical) variable and height, weight and BMI were entered as independent (continuous) variables, no physical variable was found to be a significant predictor of alpine skiing discipline success (height, $P = 0.701$; weight, $P = 0.675$; BMI, $P = 0.732$).

Table 1 Multiple comparisons of physical profile of the top ten most successful athletes in the four alpine skiing world cup disciplines.

Discipline	Giant Slalom, *P*	Super G, *P*	Downhill, *P*
Slalom			
Height	0.681	0.874	0.795
Weight	0.816	0.922	0.120
BMI	0.974	0.863	0.149
Giant Slalom			
Height	—	0.794	0.481
Weight	—	0.820	0.057
BMI	—	0.879	0.172
Super G			
Height	—	—	0.616
Weight	—	—	0.283
BMI	—	—	0.330

Both the physiological and biomechanical characteristics of elite skiing sports are complex and challenging, as recently highlighted by Müller and Liu [1]. Taken together, the results of our analysis of top-class athletes of the four main alpine skiing world cup disciplines seemingly suggest that other physiological characteristics and technical skills may be more important than the physical profile for succeeding in one specific discipline. Therefore, young athletes shall rely more on their physical performance and athletic ability than on their anthropometric characteristics for

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deciding in which alpine skiing discipline the success is more likely achievable.

Disclosure of interest

The authors declare that they have no competing interest.

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