INTRODUCTION

In Austria ski boarding schools like the Skigymnasium Stams are important institutions for talent development (Figure 1). They focus on young skiers’ academic education and their ski racing careers. Through cooperation with external institutions, an ongoing long-term project was founded 1996 in the Skigymnasium Stams (Raschner et al., 2015). A key element of this project is the sport scientific support in the form of physiological testing and consulting; the others are physiotherapeutic work, as well as nutritional and psychological counselling. This poster will focus on the sport scientific support of the physiological testing.

METHODS

In the last two decades, all 14- to 18-year old ski racers of the Skigymnasium Stams underwent the same fitness test battery two/three times annually. The following parameters were administered (Figure 2): maximum isometric leg and core strength, counter movement jump, reactive strength, jump coordination, balance, strength endurance, and endurance (Raschner et al., 2013). Differences in longitudinal development were analyzed using a one way ANOVA with Bonferroni Post-Hoc test. Gender differences were assessed using independent t-tests (p<0.05). Additionally, for each athlete, the best individual test scores per age group were used to generate normative data.

RESULTS

Relevant gender differences in physical fitness were analyzed and age-related fitness development from year to year was statistically proven (Figures 3 & 4). With the comprehensive test results over 20 years, it was possible to create age- and gender-specific normative data (Figure 5).

DISCUSSION

A ski racer requires approximately 10-15 years of preparation to compete at an international elite level. Longitudinal fitness test batteries generate a useful database to support coaches in talent development. Excellent physical and psychological preparation is an unconditional prerequisite for youth racers to reduce the risk of traumatic and overuse injuries (Spörri et al., 2017). The established norm profiles for sport motor function and fitness tests in all age groups of the Skigymnasium Stams can help in detecting deficits early and correcting the problem(s). An important consideration is that the 14-18 year-old age group (the students in Stams) is very sensitive to training intensities and volumes due to the physical developmental changes that occur. Therefore, the choices of exercises and training programs must consider the physical development of the athlete. Testing of training efficiency ensures that the coaches continually critique and revise their programs, but also acquaint their students with testing, because they will encounter these tests in their later career. The holistic approach of the Skigymnasium Stams is also important in preventing drop-outs. The complexity of ski racing coupled with dissimilar individual physical maturation processes challenges for coaches, sport scientists, psychologists and physiotherapists/medical staff, when evaluating and training youth ski racers.

REFERENCES


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