n=10) did not perform specific respiratory muscle training. We measured before and after training BMI, dyspnoea (MRC questionnaire), lung function, respiratory muscle strength and endurance, exercise tolerance (6 min walking test) and quality of life (SF 36 questionnaire).

Results. Respiratory muscle endurance was significantly improved in EXP group (+52±27.3%; EXP vs CON p<0.001) while respiratory muscle strength did not change (p>0.05). Exercise tolerance was significantly improved in EXP group (+54±34.9 m; p<0.006). Dyspnoea was significantly reduced in EXP group (-1.9±0.9 pts; p<0.047). Quality of life was significantly improved in EXP group (+70±30 pts; p<0.001).

Conclusions. This preliminary study suggests that RMET improve respiratory muscle endurance, dyspnoea, exercise tolerance and quality of life in obese patients. RMET could complete nutritional readjustment and standard physical activity program but further studies are needed to confirm these data.

EFFECTS OF MAXIMAL STRENGTH TRAINING ON ROLLER SKI DOUBLE POLING PERFORMANCE IN TWO HIGHLY TRAINED ELDERLY, MALE CROSS-COUNTRY SKIERS

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Introduction: The effect of maximal strength training with emphasis on improved 1RM on cross-country ski performance is reported (Hoff et al. 2002), but none has so far investigated this in highly trained elderly, male cross-country skiers. The aim of this study was to investigate the effects of maximal strength training in highly trained elderly male skiers on a) double poling performance at short and long distances on roller skis and, b) maximal and submaximal strength.

Methods: Two highly trained male cross-country skiers (60 yr, maximal oxygen uptake (VO2max) 58 and 50mL kg-1 min-1) participated in this study. The subjects had long experience with endurance training, but little experience with strength training. A pretest-posttest design was applied, with a nine week training intervention period between. Strength training and testing was carried out using a modified cable pulley, designed to simulate the double poling technique on roller ski. Force parameters were measured using a force tranducer. Strength training was performed three times a week for nine weeks. The endurance training during the experiment was the same as the last two months before the experiment. Tests performed in pre- and posttest were: 1) one repetition maximum (1RM) in the cable pulley, 2) peak force (PF80) and time to peak force (TPF80) with a workload at 80% of 1RM in pretest, 3) maximal number of repetitions with a workload at 60 and 80% of 1RM in pretest (rep60, rep80), 4) VO2max during treadmill running, and 5) performance tests on roller skis a) 50 m double poling, b) 1.5 km double poling and c) 7.8 km double poling . Accumulated oxygen uptake was measured during the last two roller ski tests. In posttest, PF, TPF, and maximal repetitions with a workload at 80% of 1RM in posttest were measured.

Results: 1RM improved with 35 and 20% in the two subjects. Rep60 improved from 305 to 463 and from 97 to 490 reps, respectively for the two subjects, and rep80 improved from 27 to 77 reps, and from 18 to 78 reps. Maximal repetition whit a workload at 80% of 1RM in posttest was 29 and 35. Minor changes in PF and TPF, as well as accumulated oxygen uptake, were found from pre- to posttest. There was no change in VO2max during treadmill running from pre to post-test. Both subjects had an improvement in all performance tests on roller skis: 50 m (0.47 and 0.21 sec), 1.5 km (6.5 and 8.0 sec), and 7.8 km (40 and 37 sec).

Discussion: It is concluded that maximal strength training with emphasis on improved 1RM, may improve endurance performance in highly trained elderly skiers without changes in VO2max or accumulated VO2. The improvements in strength, submaximal strength and the roller ski performance seemed to be related to the increased in strength per se, and not to changes in PF or TPF.

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PEAK CARDIORESPIRATORY ASSESSMENT IN OVERWEIGHT PREPUBESCENT CHILDREN

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Introduction: Over the past 30 years, the preponderance of overweight youth has increased (1), this, in part, has been attributed to a decline in physical activity among children and adolescents (2). In order to evaluate peak cardiorespiratory function and accurately prescribe endurance exercise, VO2max and Ventilatory Anaerobic Threshold (VAT), when available, should be assessed (4). The first one indicates the functional capacity of cardiorespiratory function and is often considered as the benchmark indicator of cardiorespiratory fitness (3) and the second one provides a better index of aerobic performance. The purpose of this study was to compare peak cardiorespiratory parameters during a treadmill test between groups of prepubescent children with different Body Mass Indexes (BMI).

Methods: The sample was composed of 33 children and was divided into three groups according to BMI cut-off points proposed by Cole et al. (2000): 11 Non Obese (age: 11,55 ± 0,52; weight: 42,60 kg ± 5,64; BMI: 18,22 ± 1,20), 11 Overweight (age: 11,27 ± 0,64; weight: 50,98 kg ± 5,82; BMI: 22,21 ± 1,05) and 11 Obese (age: 10,91 ± 0,54; weight: 58,49 kg ± 11,05; BMI: 27,96 ± 2,30). A maximal, progressive and incremental test using ergo-spirometry procedures (Cosmed® k4b2) was selected to tested in laboratorial context. Heart rate was measured with the Polar S610. The comparison and descriptive data was analyzed between the groups (SPSS, ver.15.0).

Results: All groups show significant differences in weight and BMI measures. Significant differences were observed for the VAT parameter between Overweight (OV) and Obese (O) group and for the VO2max/kg parameter between Non Obese (NO) and O groups. The VO2max/kg has an inversely relation to the BMI parameter in this groups (NO – 53,18 ml.kg.min-1; OV – 50,48 ml.kg.min-1; O – 46,90 ml.kg.min-1).

Conclusions

The cardiorespiratory condition inversely relates with the body mass and the BMI could be an indicator of the cardiorespiratory status of children.

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