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THE DIFFERENCE BY AGE GROUP FOR ANTHROPOMETRICS AND FORCE IN BODYBUILDERS

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Abstract:
Introduction: The purpose of this scientific paper is to compare the physical parameters between the age groups as well as the force with the drop jump test. **Methods:** In this study, three groups of randomly selected subjects were included. 28 participants took part in the study (9 participants 18.5 years SD 2.1; 8 participants 22.7 years SD 2.4; 11 participants 29 years SD 2.9). The participants were regularly bodybuilder that took part in national championship in Albania. Drop jump test were used measuring force using a force plate. **Results:** The final results on this study for age category comparison show that; for body weight comparison does not represent significant changes (sig = 0.8), body height does not represent significant changes (sig = 0.5), maximum drop-down strength does not represent significant changes (sig = 0.7) the maximum force per kg of drop jump does not represent significant changes (sig = 0.9), the maximum power on drop jump does not represent significant changes (sig = 0.9), the contact time does not represent significant changes (sig = 0.1), time in the air does not represent significant changes (sig = 0.4), the difference in air time and momentum does not represent significant changes (sig = 0.8). **Discussion:** To conclude data of this study show that there is no significant changes between three age groups for anthropometric parameters and force.

Keywords: force, anthropometric, bodybuilder

1. Introduction

Cardiorespiratory endurance has long been recognized as one of the fundamental components of physical fitness. (Anstrand 1986 and Maughan 1969). Thus far, only one study has compared trained to untrained individuals under a concurrent training protocol. Hunter and colleagues (Hunter et al., 1987) took trained endurance athletes and untrained individuals and had them perform strength training and endurance exercise simultaneously. Predictably, it was found that the endurance trained athletes gained more strength then the untrained individuals. Now this suggests that with

training experience you are less prone to the negative effects of concurrent training. However the flaw in this study is that they did not examine these endurance athletes while under resistance training alone conditions. Regardless studies have found that adding endurance training to strength training regimens can result in negative effects in both trained (Hennessy & Watson 1994; Kraemer et al., 1995) and untrained (Dudley & Djamil 1985; Craig et al 1991) individuals. There are a number of hypotheses however, that can be applied toward the experience of an individual. With training experience, you are likely to become less prone to decrements from cardiovascular training. During competition preparation, fat-free mass did not decrease greatly (–3.9%). The loss in body weight was thus primarily due to loss of body fat as desired. The subject's total body water was relatively stable over the preparation and recovery period and is similar to values previously reported in bodybuilders (Piccoli et al., 2007). Total body water has been shown to be elevated in bodybuilders compared with untrained individuals, and this is thought to be due to an increase in cytoplasmic volume (MacDougall et al., 1982). In addition, the substantial drop in resting energy expenditure during competition preparation appeared driven more by a decrease in energy intake than by loss of fat-free mass. During recovery, percent body fat increased gradually, not returning to baseline values until 4 months after competition. The subject's diet was more irregular during recovery than during preparation; however, a stated (and achieved) goal of the subject was to not regain body fat too quickly. The purpose of this scientific paper is to compare the physical parameters between the age groups as well as the force with the Drop jump test.

2. Methods

In this study, three groups of randomly selected subjects were included. 28 participants took part in the study (9 participants 18.5 years SD 2.1; 8 participants 22.7 years SD 2.4; 11 participants 29 years SD 2.9). The participants were regularly bodybuilder that took part in national championship in Albania. Drop jump test were used measuring force using a force plate with Leonardo mechanography test (Force Drop Jump).

2.1 Statistical analysis

All variables evaluated in this study were tested for normality. The ANOVA (one way) test followed by the LSD (post hoc) test was used to compare the difference between parameters of the three age groups. Level $p < 0.05$ (Significant Change) was accepted in this study. All statistical analyzes were performed using SPSS 20.0 software.

3. Results

Table No.1 provides data by age category. For the category of age -20 years: Body weight (mean = 83) (SD = 10), body length (average = 175) (SD = 5.5), maximum force on drop jump (mean = 3.3) (SD = 1.3), maximum force per kg on drop jump (mean= 40) (SD 11.70), maximum power per kg on drop jump (average = 30) (SD = 10.5), contact time

(average = 0.4) (SD = 0.1) , air time (mean = 0.5) (SD = 0.1), time difference in air and peak time (mean = 1.4) (SD = 0.6).

For the age group of 20-25 years: body weight (average = 84 kg) (SD = 9), body length (average = 178) (DS = 2.5), maximum jump force on drop (average = 3.1) (SD = 0.4), the maximum force per kg (mean = 38) (SD = 8.7), maximum power per kg (mean = 30.3) (SD = 6.2), (mean = 0.3) (SD = 0.1), air time (mean = 0.5) (SD = 0.3), time difference in air and peak time (mean = 1.6) (SD = 0.4).

Table 1: Descriptive statistics for comparison by age category

Age_Range		Mean	Std. Deviation
<20 yrs	Body_weight	82.644	9.6746
	Body_height	174.667	5.4544
	Force_Drop_Jump_F_max	3.3122	1.27177
	Force_Drop_Jump_F_max_kg	40.0422	11.74687
	Force_Drop_Jump_Power_max_kg	29.6356	10.46357
	Force_Drop_Jump_Contact_Time_tc	.3959	.11034
	Force_Drop_Jump_Air_Time	.5019	.07070
	Force_Drop_Jump_Ta_Tc	1.4000	.56332
	Valid N (listwise)		
20-25 yrs	Body_weight	83.600	8.9605
	Body_height	178.333	2.5166
	Force_Drop_Jump_F_max	3.1567	.38837
	Force_Drop_Jump_F_max_kg	38.4100	8.71950
	Force_Drop_Jump_Power_max_kg	30.2733	6.21226
	Force_Drop_Jump_Contact_Time_tc	.3220	.06227
	Force_Drop_Jump_Air_Time	.4883	.02974
	Force_Drop_Jump_Ta_Tc	1.5667	.37554
	Valid N (listwise)		
>25 yrs	Body_weight	85.557	7.8989
	Body_height	173.286	6.7507
	Force_Drop_Jump_F_max	3.7143	1.04334
	Force_Drop_Jump_F_max_kg	40.4857	8.58053
	Force_Drop_Jump_Power_max_kg	27.8343	7.04046
	Force_Drop_Jump_Contact_Time_tc	.2971	.07650
	Force_Drop_Jump_Air_Time	.4496	.08440
	Force_Drop_Jump_Ta_Tc	1.5629	.34999

For the age category +20 years: body weight (mean = 85.5) (SD = 7.9), body length (mean = 173) (SD = 6.7), the maximum drop jump force (mean = 3.7) (SD = 1), maximum strength per kg (mean = 40.5) (SD = 8.6), maximum power per kg (average = 27) (SD = 7), contact time (average = 0.3) (SD = 0.1), time in the air (mean = 0.4) (SD = 0.1), time difference in the air and peak time (mean = 1.6) (SD = 0.3).

Table 2 gives comparisons for measurements between three age groups. Statistical analyzes are: body weight between groups (sum of square = 33.7, mean square = 16.8 and F = 0.2), body height (sum of square = 53.6, mean square = 26.8 and F = 0.8), the maximum force in drop jump (sum of square = 53.6, mean square = 26.8 and F = 0.8), the maximum strength per kg on drop jump (sum of square = 9.2, mean square = 4.6 and F = 0), the maximum power on drop jump (sum of square = 8.9, mean square =

26.8 and F = 0.1), the time difference in the air (sum of square = 0, mean square = 0 and F = 1), time air (sum of square =0, mean square =0 dhe F= 1), the time difference in the air and the time of the accelerate (sum of square = 0.1, mean square = 0.1 and F = 0.2).

Table 2: Statistics for comparison of variables by age category

		Sum of Squares	Mean Square	F
Body_weight	Between Groups	33.662	16.831	.210
	Within Groups	1283.719	80.232	
	Total	1317.381		
Body_height	Between Groups	53.589	26.794	.818
	Within Groups	524.095	32.756	
	Total	577.684		
Force_Drop_Jump_F_max	Between Groups	.914	.457	.370
	Within Groups	19.772	1.236	
	Total	20.686		
Force_Drop_Jump_F_max_kg	Between Groups	9.200	4.600	.043
	Within Groups	1697.724	106.108	
	Total	1706.924		
Force_Drop_Jump_Power_max_kg	Between Groups	17.912	8.956	.115
	Within Groups	1250.483	78.155	
	Total	1268.394		
Force_Drop_Jump_Contact_Time_tc	Between Groups	.041	.020	2.326
	Within Groups	.140	.009	
	Total	.181		
Force_Drop_Jump_Air_Time	Between Groups	.011	.005	1.041
	Within Groups	.085	.005	
	Total	.096		
Force_Drop_Jump_Ta_Tc	Between Groups	.127	.064	.287
	Within Groups	3.556	.222	
	Total	3.683		

Data for the Table 3 shows sigma values for comparing variables for all three age groups.

Table 3: Comparison for variables by age category (P or Sig values)

ANOVA

		Sig.
Body_weight	Between Groups	0.813
	Within Groups	
	Total	
Body_height	Between Groups	0.459
	Within Groups	
	Total	
Force_Drop_Jump_F_max	Between Groups	.697
	Within Groups	
	Total	
Force_Drop_Jump_F_max_kg	Between Groups	.958
	Within Groups	
	Total	

Force_Drop_Jump_Power_max_kg	Between Groups	.892
	Within Groups	
	Total	
Force_Drop_Jump_Contact_Time_tc	Between Groups	.130
	Within Groups	
	Total	
Force_Drop_Jump_Air_Time	Between Groups	.376
	Within Groups	
	Total	
Force_Drop_Jump_Ta_Tc	Between Groups	.754
	Within Groups	
	Total	

4. Discussion

The final results on this study for age category comparison show that; for body weight comparison does not represent significant changes (sig = 0.8), body height does not represent significant changes (sig = 0.5), maximum drop-down strength does not represent significant changes (sig = 0.7) the maximum force per kg of drop jump does not represent significant changes (sig = 0.9), the maximum power on drop jump does not represent significant changes (sig = 0.9), the contact time does not represent significant changes (sig = 0.1), time in the air does not represent significant changes (sig = 0.4), the difference in air time and momentum does not represent significant changes (sig = 0.8). To conclude data of this study show that there is no significant changes between three age groups for anthropometric parameters and force.

The author considers that the decline in maximum aerobic strength and muscular strength with age advancement are examples of functional fall in the body that lead to aging, which can severely limit physical performance and are in a negative correlation with all mortality cases (Salvador Romero-Arenas, 2013). As is well known, endurance exercises and resistance exercises can significantly improve physical performance and health factors in older individuals. Based on the resistance training circuit with raising light weights and minimum breaks during the series and repetitions can be a very effective strategy for increasing oxygen consumption, pulmonary ventilation, strength and functional capacity by improving body composition).

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