

Fitness and health status changes by regular physical activity WP8



Innsbruck 14th of November 2016

Study aims

- 1) **to compare the fitness and health status of a group of regularly physically active subjects with an age and gender matched group of sedentary persons**
- 2) **and second to monitor changes in fitness and health status (including mitochondrial function) of the sedentary subjects starting with physical activity**

Methods

Participants

Active group: 15 middle-aged (40-65 yrs) participants (both sexes) who participated in a regular and supervised physical activity program over 6 years

Sedentary group: 15 age and gender matched participants who will start becoming physically active

Methods



Measurements

- **Venous blood** samples (fasting glucose, triglycerides, cholesterol – TC, HDL, LDL); inflammation (CRP, IL-6 and TNF-alpha); **mitochondrial function**
- **Oxidative stress** (dROMs test; total antioxidant level from the biological antioxidant potential (BAP) test)
- **Body composition**
 - Hip and waist circumference (to the nearest 0.5 cm)
 - Body weight (to the nearest 0.1 kg)
 - Body composition will be determined by bioelectrical impedance analysis, including the measurement of body fat and fat free mass
- **Maximal exercise testing**
 - The starting workload 25 watts for females and 50 for males, which will be increased by 25 watts every 2 min for females and 50 watts every 3 min for males
 - Blood lactate concentration
 - Recording of BORG (perceived exertion) and arterial oxygen saturation and muscle oxygenation (NIRS, Niro 200, Hamamatsu Photonics K.K., Hamamatsu City, Japan)

Training



- one session (75 min) per week
- focusing on endurance, strength and coordination

Preliminary Results

-Baseline-

	Active Group			Sedentary Group		
	Females (N=5)	Males (N=10)	Total (N=15)	Females (N=6)	Males (N=9)	Total (N=15)
Age (years)	55 ± 9	51 ± 7	52 ± 8	51 ± 5	52 ± 7	52 ± 6
Hight (cm)	168 ± 5	178 ± 6	176 ± 8	171 ± 4	177 ± 5	175 ± 6
Weight (kg)	60.5 ± 2.6	80.4 ± 2.9	73.8 ± 10.0	69.5 ± 7.5	84.5 ± 10.1	78.5 ± 11.7
BMI	21.5 ± 1.6	25.0 ± 1.4	23.8 ± 2.2	23.8 ± 2.9	26.9 ± 3.1	25.7 ± 3.3
dROMs	339 ± 52	279 ± 40	299 ± 52	349 ± 39	286 ± 35	313 ± 48
BAP	2185 ± 70	1828 ± 313	1947 ± 308	1932 ± 260	1949 ± 244	1942 ± 241

BWt igh:

Total +8.0% in SG

Female +10.3%

Male +7.6%

Preliminary Results

-Baseline-

	Active Group			Sedentary Group		
	Females (N=5)	Males (N=10)	Total (N=15)	Females (N=6)	Males (N=9)	Total (N=15)
VO₂max (ml/min)	2180 ± 174	3615 ± 394	3137 ± 774	2033 ± 438	2796 ± 267	2497 ± 509*
VO₂max (ml/kg/min)	36.0 ± 2.4	45.1 ± 5.7	42.1 ± 6.5	29.2 ± 4.8	33.8 ± 6.9	32.0 ± 6.4*
HR_max	174 ± 9	176 ± 9	176 ± 9	172 ± 14	171 ± 10	172 ± 11
Watt_max	165 ± 21	285 ± 26	245 ± 63	146 ± 38	198 ± 26	177 ± 40*
Watts/kg	2.7 ± 0.3	3.6 ± 0.4	3.3 ± 0.5	2.1 ± 0.5	2.4 ± 0.6	2.3 ± 0.6**
Lactate_max	10.6 ± 2.5	11.4 ± 2.2	11.1 ± 2.3	8.2 ± 2.1	8.7 ± 2.3	8.5 ± 2.2*
BORG_max	16.6 ± 1.1	18.7 ± 1.3	18.0 ± 1.6	19.2 ± 1.3	17.9 ± 1.6	18.4 ± 1.6

Watt/kg max:

Total +38.5% in AG

Female +28.0%

Male +38.0%

Preliminary Results

Baseline/Posttest1

No significant changes from Baseline to Posttest 1
(after 10wks of training) for the sedentary group...

→ Continue training