IMPROVING THE PHYSICAL FUNCTION OF WHEELCHAIR FENCERS

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OBJECTIVES

Wheelchair fencing is a popular parasport. The aim of our research is to assess and develop the reaction time, the clamping force and the extent of protrusion.

METHODS

Our research was carried out between October 2021 and March 2022 in Zalaegerszeg. Subjects were selected using a targeted, convenience sampling procedure. The number of items in the sample was 8 (4 men and 4 women, mean age 32.28 ± 22.42 years). Inclusion criteria: musculoskeletal disability, certified paraathlete, consent to the research (Figure 1). Exclusion criteria: mental problem, epilepsy, absence from 20% of the exercise program. Subjects underwent functional development twice (45-45 minutes) a week for 8 weeks (Table 1). Reaction times were measured with an electronic target especially designed for fencing training (EFT-1), hand clamping force was measured with a Jamar manual hydraulic dynamometer, and we measured the extent of protrusion with the Modified Functional Reach-Field-Bases (MRT). Mean, standard deviation and one sample t-test analysis was performed during the statistical calculations using IBM SPSS Statistics Program. The level of significance was p <0.05.

RESULTS

The value of EFT was 1.05±0.24 sec for the first time, while it showed a significant (p = 0.048) decrease for the second survey (0.85±0.25sec) (Figure 2). The clamping force of the hand was 26.5± 16.20 kg, which did not show a significant change after 8 weeks (26.2±16.06, p> 0.05) (Table 2). MRT was initially 27.68±12.09 cm, while 8 weeks later there was a significant increase (p <0.05) (30.31±12.26 cm) (Figure 3).

CONCLUSIONS

Based on the obtained values, the exercise program had a positive effect on the physical condition of the athletes in terms of reaction time and extent of protrusion.

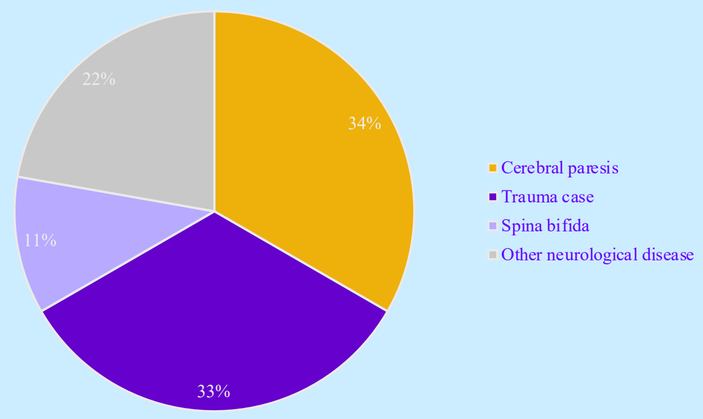

Figure 1.
Distribution of diseases among participants (N=8)

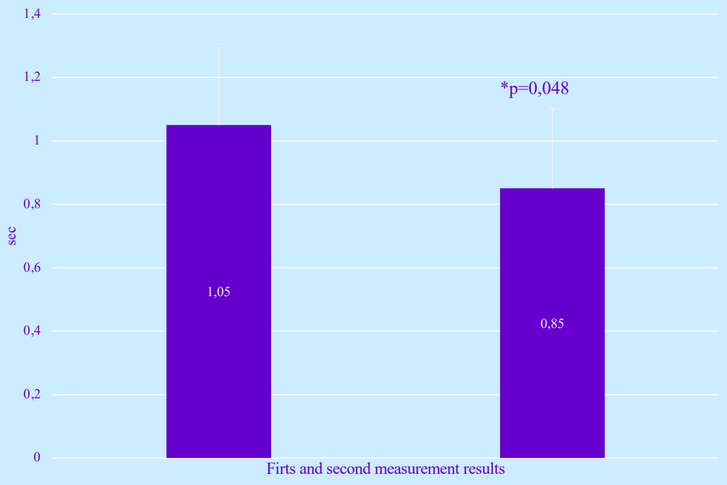

Figure 2.
Change in reaction time (N=8)

	1-2. weeks	3-4. weeks	5-6. weeks	7-8. weeks
Warming up (5-10 min)	Breathing exercises, chest and joint mobility		Dynamic warm-up	
Main part (25-30 min)	Sensing correct posture, fine manipulation	Strenghtening hand grip (thenar, mesothenar, hypothenar and wrist flexor and extensor muscles), reaction time development	Strenghtening arm, hand and trunk muscles, reaction time development	Dynamic and complex upper extremity and trunk exercises
Final part (5-10 min)	Streching (mm. trapesius sup., m. levator scapulae, musculus obliquus extenus et internus, musculus rectus abdominis, musculus serratus anterior, musculus latissimus dorsi)			
Tools	Small ball, elastic resistance, hand and wrist wights (0,5-1,5 kg), visual and verbal stimuli, EFT-1, increasing repetitions			

Table 1.
Construction of the exercises program

	Min-max	Mean (kg)+SD
Right 1	**4-45**	**27,68±12,09**
Right 2	**5-47,5**	**30,31±12,26**
Left 1	**5-43**	**31,06±12,94**
Left 2	**6-47**	**33,00±13,29**

Table 2.
Change in the clamping force of the hand (N=8)

Figure 3.
Change in the Modified Functional Reach Test (N=8)

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