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Letter to the Editor

Physical Fitness of the Arms in Patients with Rheumatic Diseases

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Dear Editor-in-Chief

Rheumatoid arthritis (RA) leads to changes in the human organ of locomotion, e.g. to reduction of muscle strength (1), to disability and lowering of patients' quality of life (2).

It is thus highly crucial to implement physical activity in the complex therapy of RA patients (3). The health qualities of a properly adjusted physical therapy have been confirmed by a number of researchers (4, 5). Few studies so far have assessed the degree of deterioration of motor coordination in patients with rheumatic diseases.

The aim of this study was the assessment of physical fitness, including motor coordination of patients with RA and other rheumatic diseases.

The study sample consisted of 61 women (RAW) and 15 men (RAM) with RA, and 39 women (OW) and 17 men (OM) with other rheumatic diseases. The controls were 45 healthy and able-bodied women (HW) and 30 men (HM).

The following tests were carried out:

Barthel Index (BI) – the scale 1-10 used to assess performance of activities of daily living, Visual-motor coordination - pressing the buttons in accordance with the light stimuli. The trials were carried out at the rates of 30, 40, 50 and 60 stimuli a min. The subjects' mean reaction time in seconds (RT) and the number of errors (NE) were selected for the analysis, the possible limitations of the range of motion (ROM) in the shoulder, elbow and wrist joints. The RAW group scored higher in the 6th BI activity - the mobility indoors test, 8. Dressing, 10. Bladder control than OW group. Much lower results were attained by the RAW group in 7. Climbing stairs, 1. Feeding, and 9. Bowels control. In four skill areas, the RAM group scored higher than OM group: 1. feeding, 6. mobility indoors, 7. climbing stairs, and 8. dressing. The RAM group scored much lower on 5. Bathing and 9. Bowels control.

There was a small significant difference between the RAM group and OM group in the coordination test of the right and the left hand at 40 stimuli per min (R: P=0.013; L: P=0.029) and at L50 (P=0.023). These results indicate that the reaction time of RAM group was longer than of OM group.

The differences in coordination test results between all the patients and healthy controls were statistically significant. The patients had longer reaction times (P=from 0.009-0.000 in women; 0.009-0.005 in men) and committed more errors (P=0.025–0.000 in women; 0.015-0.000 in men).

RA patients had more ROM limitations than other rheumatic patients, with the most limited range of movement in the wrist. RAM group had more ROM limitations than RAW group. In both groups of female patients, a greater number of ROM limitations indicated statistically significant lower BI values.

Table 1: Spearman correlations statistical significance level between Barthel Index (BI), reaction times (RT) and number of errors (NE) in the coordination test

	1.BI	3.BI	5.BI	7.BI
RAW RT	L60 0.036	L60 0.034		R30 0.010 R40 0.038 L30 0.003
RAW NE		R30 0.018 L60 0.042	R30 0.027	R30 0.013 R40 0.011 R50 0.005 R60 0.005 L30 0.018 L40 0.007 L50 0.002 L60 0.008
RAM RT	L50 0.017	L50 0.017	L50 0.049	R30 0.036
OW RT			R30 0.002 R40 0.023 R50 0.005 R60 0.003 L30 0.002 L40 0.007 L50 0.021 L60 0.005	R30 0.047 R40 0.040 L30 0.018
OW NE			R30 0.014 R40 0.018 R50 0.009 R60 0.003 L30 0.004 L40 0.019 L50 0.007 L60 0.008	R30 0.040 R40 0.019 R50 0.025 R60 0.032 L40 0.026 L50 0.023
OM NE		R30 0.042 L60 0.025		R40 0.033 L40 0.038 L50 0.020

1. 3. 5. 7. = BI activities; R = right hand; L = left hand; 30, 40, 50, 60=coordination test rates; non-significant correlations are not shown.

No such correlations were found in the RAM group. In OM group, the ROM limitations were always associated with longer reaction times and a greater number of committed errors.

The investigation results are important indication to careers of rheumatic patients, hospital and care center employees, and –primarily– to physical therapists. The last ones, while carrying out exercises with female rheumatic patients, should pay particular attention to training such self-care activities as climbing stairs, feeding and bowels control.

In male patients particularly important are exercises aimed at improving bathing skills and bowels control. A BI skill such as bowels control is not a motor skill; however, research results show that it co-occurs with other examined activities. The task for physical therapists is to provide patients with all necessary assistance. Besides, focusing only on arm exercises in patients with RA undergoing rehabilitation is definitely not enough.

The results of the coordination test revealed that the course of rheumatic diseases most definitely inhibits coordination in rheumatic patients. The RA patients under study revealed fewer correlations between the BI and coordination test results than patients with other rheumatic diseases. They must, therefore, undergo rehabilitation procedures that involve a greater diversity of physical exercises.

Acknowledgement

The authors declare that there is no conflict of interests.

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