Effect of a mobilization and active exercise program on the range of motion of bedridden patients with disuse syndrome

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4th Baltic & North Sea Conference on Physical and Rehabilitation Medicine, Riga (Latvia), September 16 - 18, 2015

Keywords: Disuse Syndrome; Goniometer; Articular mobilization; Active exercise || maria.mendes@ipb.pt

INTRODUCTION

Disuse syndrome is a disorder that is most often associated with acute or chronic disease complications. Despite disuse syndrome may affect all organs and systems, the impact of range of motion limitations caused by immobility on functional capacity to perform activities of daily living is often very severe. Mobilization and active exercise have beneficial effects that counteract the impact of immobility on the body.

OBJECTIVE

This study aims to assess the effect of a mobilization and active exercise program on the range of motion of bedridden patients with disuse syndrome.

METHOD

A quasi-experimental study was developed. The sample consisted of 26 persons that have been bedridden for more than six months at home. A mobilization and active exercise program was design, fitting patient individual needs and implemented 2 times/week for 2 months. Caregivers where trained to transfer the patient from bed to chair and to repeat active exercise every day. Data collection was performed before and after intervention, using the Barthel Index and a goniometer for range of motion evaluation.

T0

Data Collection
Sociodemografic
Barthel Index
Goniometry

Program 2 months

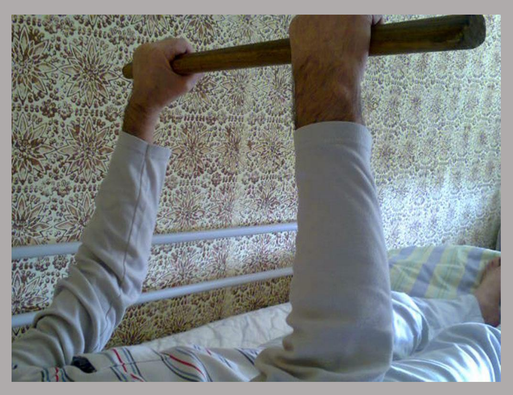
Caregivers Training
Movement and Mobility

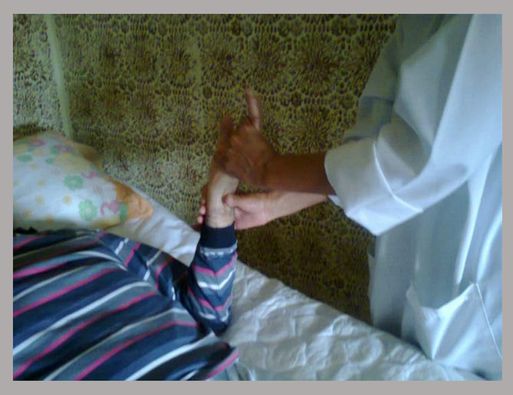
Rehabilitation Nurse - 2 x week
- passive or/and active mobilization
- active exercise (baton, exercise peddler with no load)

Caregiver – daily
- Bed to chair transfer
- Active exercise repetitions

T1

Data Collection
Barthel Index
Goniometry





RESULTS

26 participants, aged 77.19 ± 11.67 and bedridden for 18 months (18.73 ± 15.25) were enrolled, but only 24 completed the intervention program. There was a minimal difference in the sex distribution with 7.6% more women than men. Results showed a statistically significant increase on range of motion of the shoulder, elbow, wrist, hip and knee. There was statistical significance in plantar flexion but not on the dorsiflexion. Barthel Index score has increase significantly (28,65±21,28vs31,46±23,28; p=0,035) after the mobilization and active exercise program.

	Left Shoulder				Rigth Shoulder			
	Abduction T0	Abduction T1	Flexion T0	Flexion T1	Abduction T0	Abduction T1	Flexion T0	Flexion T1
N	24	24	24	24	24	24	24	24
Mean	50,77	56,67	53,46	59,58	49,42	55	55,77	61,67
Standard Deviation	47,99	51,38	51,33	53,78	46,67	49,95	49,71	51,59
Z	-3,581		-3,758		-3,463		-3,463	
P	0		0		0,001		0,001	

	Left Elbow		Rigth Elbow	
	Flexion T0	Flexion T1	Flexion T0	Flexion T1
N	24	24	24	24
Mean	65,96	71,04	65,96	72,29
Standard Deviation	39,01	40,72	38,41	39,12
Z	-3,945		-3,906	
P	0		0	

	Left Wrist				Rigth Wrist			
	Palmar Flexion T0	Palmar Flexion T1	Dorsal Flexion T0	Dorsal Flexion T1	Palmar Flexion T0	Palmar Flexion T1	Dorsal Flexion T0	Dorsal Flexion T1
N	24	24	24	24	24	24	24	24
Mean	31,92	35,21	27,12	30,21	31,35	35,63	26,92	29,58
Standard Deviation	18,55	20,51	16,86	18,27	17,41	18,84	16,25	17,5
Z	-3,3		-3,207		-3,945		-2,887	
p	0,001		0,001		0		0,004	

	Left Hip				Rigth Hip			
	Abduction T0	Abduction T1	Flexion T0	Flexion T1	Abduction T0	Abduction T1	Flexion T0	Flexion T1
N	24	24	24	24	24	24	24	24
Mean	17,88	20,63	29,81	35	17,31	20,83	29,04	33,54
Standard Deviation	10,11	11,63	18,57	19,22	9,51	10,49	13,93	14,25
Z	-3,3		-3,879		-3,69		-4,123	
p	0,001		0		0		0	

	Left Knee		Rigth Knee	
	Flexion T0	Flexion T1	Flexion T0	Flexion T1
N	24	24	24	24
Mean	60,58	67,71	61,92	70
Standard Deviation	32,44	32,06	30,66	31,24
Z	-3,841		-4,062	
P	0		0	

	Left Foot				Rigth Foot			
	Plantar Flexion T0	Plantar Flexion T1	Dorsal Flexion T0	Dorsal Flexion T1	Plantar Flexion T0	Plantar Flexion T1	Dorsal Flexion T0	Dorsal Flexion T1
N	24	24	24	24	24	24	24	24
Mean	17,5	19,79	7,69	8,75	18,08	21,04	7,69	8,33
Standard Deviation	11,42	13,86	4,29	5,56	11,05	13,1	3,53	4,34
Z	-2,496		-2,236		-3		-1,732	
p	0,013		0,025		0,003		0,083	

	Barhtel Index T0	Barhtel Index T1
N	24	24
Mean	28,65	31,46
Standard Deviation	21,28	23,28
Z	-2,111	
p	0,035	

CONCLUSION

A mobilization and active exercise program implemented regularly may contribute to improve range of motion of bedridden with disuse syndrome. Thus, based on these results, it is believed that the intervention of rehabilitation nurse was an added value, contributing to an increase in range of motion and independence of patients.

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