



COMPLEX FUNCTIONAL ASSESSMENT OF THE HIP JOINT

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ABSTRACT

Introduction: In relation to the study reporting the effects of applying phased complex rehabilitation in patients with total hip arthroplasty, it has been concluded that the everyday clinical practice in Bulgaria does not apply complex examination, giving an objective picture about the extent of functional status of patients with trauma and diseases of the hip.

Aim: The main goal of this report is to present a test which incorporates all known and routine research and in which the total number of points determines the functional status of patients with trauma and diseases of the hip.

Material and Methods: Based on the Hip dysfunction and Osteoarthritis Outcome Score, the Harris Hip Score modified test, scale D'Aubigne and Postel and Iowa's test for complex functional evaluation of the hip joint, we have developed a test including information about the degree of pain; goniometry and manual muscle testing of the hip; locomotor test – type of gait and adjuvants; test for Daily Activities of Life. The test has been developed on the basis of expert assessment by doctors and physiotherapists of the proposed indicators for evaluation and determination of the weighting factors' contribution to the general condition of the patient.

Conclusion: The developed and tested method of complex functional assessment of the hip joint enables our colleagues, dealing with trauma and diseases of the hip, to use it in various research and scientific projects, as well as in general medical practice.

Key words: functional assessment, hip joint, rehabilitation, occupational therapy

INTRODUCTION:

Further to a study aiming to measure the effect of applying a multiple-stage rehabilitation program for patients with hip joint arthroplasty, it was established that in the standard medical practices in Bulgaria, there is no complex

study that provides an objective assessment for the stage of development and functional condition of patients with hip joint illnesses or traumas [1].

A new test was developed based on the Hip dysfunction and Osteoarthritis Outcome Score (HOOS) [2], the Harris Hip Score modified test [3], the D'Aubigne and Postel scale and the Iowa test [4] for complex functional assessment of the hip joint. The new test provides information on: the degree of pain; goniometry and manual muscle testing (MMT) [5] of the hip joint; a locomotion test for type of gait and walking aids [6] a daily activities of life test (DAL) [7]. The test includes a scale that translates the various test results into measurable units (points), and a key for determining the degree of functional condition of patients with hip joint illness or trauma.

AIM:

The aim of this report is to introduce a complex test using a point system which includes several known and routine tests, and determines the functional condition of patients with hip joint illness or trauma based on the total amount of points collected.

METHODS AND MATERIALS:

The test's design is based on expert assessment of the suggested measurement criteria, the corresponding weight of each sub-test result and its contribution to the overall condition of the patients, which was made by kinesitherapists and doctors who specialize in physical and rehabilitation medicine. Average result values were used to determine the number of points given for each test. The entire test consists of 5 sub-tests – VAS test for the pain; hip joint movement volume test; MMT; locomotion test and DAL test. The maximum number of points is 100 – „Excellent” functional condition, 70-85 means “Very good”, 40-70 is „Good”, and below 40 points – „Satisfactory”. The patient test results from the complex functional assessment of the hip joint are stored in a patient report (table 1).

Table 1. Patient report for complex functional assessment of the hip joint

No.	Test type	Points	Before	After	Diff.
1.	VAS for pain – max. 20 p.	none - 20 p. intense - 0 p.			
2.	Goniometry – max. 10 p.	Abduction of the hip joint - max. 4 p.(5° = 0,5 p.) Flexion of the hip joint - max. 4 p.(5° = 0,17 p.) Extension of the hip joint - max. 2 p.(5° = 1 p.)			
3.	MMT – max. 10 p.	Hip joint flexor muscles - max. 3 p. (1 degree. = 0,6 p.) Hip joint protractor muscles - max. 3 p. (1 deg. = 0,6 p.) Hip joint abductor muscles - max. 4 p. (1deg. = 0,7 p.)			
4.	Locomotion test – max. 30 p. · 1 limp – max. 15 p. · 2 use of walking aids – max. 15 p.	No limp – max. 15 p. No limp, but with cane - max. 12 p. Limp from shortened limb - max. 9 p. Limp from abductors - max. 6 p. Limp from pain - max. 3 p. Walking impossible - max. 0 p. No walking aids - max. 15 p. With a cane for longer distances - max. 12 p. With a cane at all times - max. 9 p. With one crutch - max. 6 p. With two crutches - max. 3 p. Walking impossible - max. 0 p.			
5.	DAL – max. 30 p. · 1 Personal hygiene – max. 7 p. · 2 Putting on clothes and shoes – max. 7 p. · 3 Food preparation and eating – max. 5 p. · 4 Daily activities – max. 7 p. · 5 Transportation – max. 4 p.	Sitting down on the toilet (max. 1 p. - 1 deg. = 0,2 p.) Makeup/WC (max. 2 p. - 1 deg. = 0,4 p.) Taking a bath (max. 4 p. - 1 deg. = 0,8 p.) Putting on underwear (max. 2 p. - 1 deg. = 0,4 p.) Putting on pants/dress (max. 1 p. - 1 deg. = 0,2 p.) Putting on socks (max. 3 p. - 1 deg. = 0,6 p.) Putting on shoes (max. 1 p. - 1 deg. = 0,2 p.) Cooking (max. 1 p. - 1 deg. = 0,2 p.) Serving food (max. 3 p. - 1 deg. = 0,6 p.) Eating (max. 1 p. - 1 deg. = 0,2 p.) Cleaning (max. 1 p. - 1 deg. = 0,2 p.) Laundry (max. 1 p. - 1 deg. = 0,2 p.) Ironing (max. 1 p. - 1 deg. = 0,2 p.) Lifting heavy weight (max. 2 p. - 1 deg. = 0,4 p.) Public transport (max. 4 p. - 1 deg. = 0,8 p.) Car (max. 2 p. - 1 deg. = 0,4 p.) Driving (max. 3 p. - 1 deg. = 0,6 p.)			
	max. – 100 p.				
	Index - key	85-100 p. - „Excellent” condition 70-85 p. - „Very good” condition 40-70 p. - „Good” condition under 40 p. - „Satisfactory” condition			

Table 2 displays the scale for assessing pain (the patient determines the points based on feeling) – lack of pain is 20 points, while constant pain unaffected by treatment – 0.

Table 2. VAS scale for pain assessment

Points	Degree of pain
0	Constant intense pain limiting all movements
5	Strong pain (also during the night) limiting normal movements
10	Moderate pain while walking, going away with rest
15	Mild occasional pain during normal movements
20	No pain

Standard goniometry [7] and MMT (maximum of 10 points for each method) [5] are used to measure the movement volume of the hip joint – flexion, extension and abduction.

Table 3 shows the modified test for functional gait assessment by D'Aubigne and Postel, which consists of two parts [4, 6]:

1. Trendelenburg test– measures the stability of the hip joint and the abductors' ability to support and stabilize the pelvis on one foot - 0 to 15 points.
2. Necessity of walking aids – 0 to 15 points.

Table 3. Locomotion test scale

Based on limp		Based on walking aids	
No limp (no walking aids)	15	No walking aids	15
No limp but with a cane or walking aid	12	With a cane for longer distances	12
Limp from shortened limb	9	With a cane at all times	9
Limp from abductors (positive Trendelenburg)	6	With one crutch	6
Limp from pain	3	With two crutches	3
Walking impossible	0	Walking impossible	0

A maximum of 30 points are given for the applied DAL test which includes “make up and personal hygiene” (maximum 7 points), “putting on shoes and clothes” (maximum 7 points), “food preparation and eating” (maximum 5 points), “daily and work activities” (maximum 7 points), and “transport” (maximum 4 points). Table 4 shows the DAL assessment scale.

Table 4. DAL assessment scale

Degree	Functional condition assessment
0	the patient cannot perform the action required
1	the patient is trying to perform the action but requires significant aid
2	the patient can perform the action but requires a companion to watch, control and guide him/her
3	the patient can perform the activity slowly and with limited capacity
4	the patient performs the activity at near-normal levels of strength, speed, coordination and endurance
5	the patient performs the activity properly, completely unaided

CONCLUSION:

The newly developed and proven test for complex functional assessment of the hip joint can be used in various research and scientific projects of doctors dealing with hip joint illnesses and traumas, and can be implemented and used in everyday medical practices.

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