Functional assessment of hemiparetic upper extremity after stroke: Literature review

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Introduction.–The evaluation of the functional capacities of the upper limb has a major role in the choice and the validation of the rehabilitation technique employed [1], and in the following of the evolution.

Material and method.–We questioned pubmed database by using the keywords hemiparetic upper extremity; assessment; stroke. We selected the tests the most often used for the functional evaluation of the hemiparetic upper limb. We took the International Classification of Function; Disability and Health (ICF) as framework. The criteria of analysis retained for each test were: the corresponding ICF level; the clinimetric properties; the value of the minimal clinically important difference and theirs limits.

Results.–We retained ten tests which are generally used: Fugl-Meyer for deficiency, Block and Box Test Nine Hole Peg Test, Wolf Motor Function Test, Action Research Arm Test, Motor Activity Log, ABILHAND and FIM for the activity and Stroke Impact Scale and EuroQol Quality of Life for the participation. For certain tests the value of the minimal clinically significant difference was given. We propose an algorithm, which can help clinicians in the choice of the clinical tool for evaluation of the hemiparetic upper limb according to the time since stroke, of the severity of the hemiparesis and the objective targeted by the evaluation.

Discussion.–There is a significant number of the tests validated and used for the functional evaluation of the hemiparetic upper limb. The choice of the assessment tool the most adapted to the targeted objective is essential for the interpretation of the results obtained.

Reference

Analysis of 26 exercises of the Wii Fit Plus™ from Nintendo to facilitate prescription in rehabilitation of balance disorders

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Keywords: Wii Fit; Balance; Instability; Rehabilitation; Visual feedback

Introduction.–The Wii Fit™ from Nintendo (associated to Wii Balance Board®) (WFPN) is a rehabilitation tool for increasing use in the treatment of balance disorders, particularly because of its playfulness, which enhances patient adherence to rehabilitative program. The objective of this work is to offer therapists a summary table describing the precise characteristics of each exercise. As the result, the prescription of these exercises may be improved in terms of difficulty and analytical work arrangements.

Material and method.–Twenty-six games were reviewed by a committee of four therapists specialized in balance disorders rehabilitation. For each exercise, a score for the overall difficulty of execution was set from 1 (very easy) to 4 (very difficult). We determined a set of endpoints, for which each exercise was rated positively or negatively. These criteria represent the main areas of balance work proposed by the exercises, which are: antero-posterior weight transfer, medio-lateral weight transfer, multi-directional weight transfer, dynamic work with foot movement, synergistic movements of the trunk and lower limbs, movements of the upper limb (using remote), number of hands required (one or two), cognitive task requiring capacity of anticipation, adaptation and flexibility, and comments about the specificity of the exercise.

Discussion.–We note that the proposed games are only based on visual feedback, which is a limit to subjects with visual impairment or in whom visual dependence should not be reinforced. Some exercises require the use of both upper limbs and are not suitable for hemiplegic patients. The description of the characteristics of the 26 exercises of the WFPN will allow to better focus the rehabilitation of balance disorders, taking benefit of the entertainment and the variety of these games. Lastly, the low cost of the device and its easy use will allow to continue this rehabilitation with liberal physiotherapist or at home.