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Changes of susceptibility of body injuries during a fall of patients with mental impairment participating for several months in special cognitive-behavioural therapy

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Abstract

Background and Study Aim. People with intellectual impairment are especially vulnerable to fall due to cognitive dysfunctions, taking inadequate or danger actions in certain situations while being unaware of consequences [1,2]. Study results shows impaired ability to learn new motor skills by patients with intellectual disabilities and intercurrent mental disorders [3].

The purpose of this study was the knowledge about efficiency of cognitive-behavioural therapy with exercises designed to reduce susceptibility of body injuries during a fall and collision with the ground.

Material and Methods. Patients were tested using susceptibility test of body injuries during a fall (STBIDF) [4] at the beginning of therapy with safe fall method exercises and after every six months. During each of three task (Figures 1-3) that test is composed of, correctness of motor control of hips, hands and head (additionally legs in third task) were assessed during simple simulation of collision with the ground (on a signal, on soft ground subject is ought to change posture from vertical to horizontal – lying on back).



Figure 1. First task of STBIDF



Figure 2. Second task of STBIDF



Figure 3. Third task of STBIDF



Figure 4. Presentation of forced simulated fall conducted by therapist.

Results of observations: “0” lack of error, “1” first grade error, “2” second grade error. Total number of points is general indicator of SBIDF: low (0), average (1-3), high (4-8) and very high (9-14). Same criteria of STBIDF were used during testing performance in forced simulated falls (FSF) conducted by therapist (Figure 4).

Five people (two women and three men) in age from 34 to 56 ($=45.8$) with diagnosed moderate or high mental impairment and intercurrent mental disorder (schizophrenia, anxiety-depressive disorder or abnormal behaviour) were participating in therapy sessions. They are attending to Environmental House of Self-Help for People with Mental Disorders in Oswiecim. Criteria of choice were similar level of disability and lack of somatic contraindications for individual kinesiotherapy. For cardinal variable (referred to patient code P1 etc.) for result presentations is SBIDF indicator assessed before therapy.

Results Patients reduced considerably motor control errors during a fall after every six months blocks of therapy sessions. Before therapy patients showed high and very high SBIDF (indicator from 6 to 14 points). After six months they reduced motor control errors during a fall (SBIDF indicator from 3 to 9 points). After next 6 and 12 months they reduce SBIDF even further (indicator from 1 to 6 points). 6 weeks after end of therapy sessions STBIDF indicator remain reduced (Figure 5).

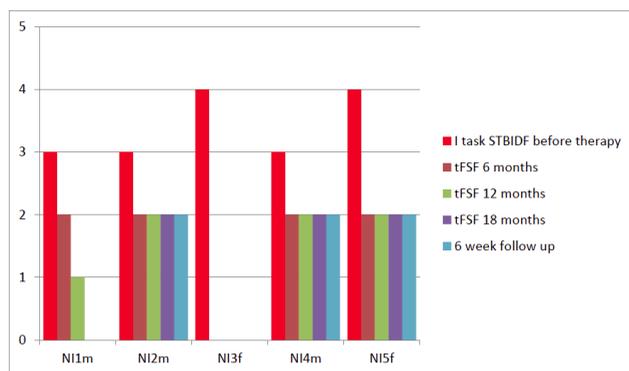


Figure 5. Changes of susceptibility of body injuries during a fall before and after every six months of therapy measured in STBIDF (f – female, m – male)

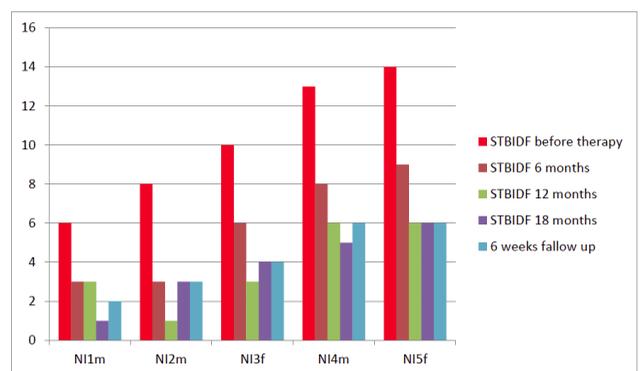


Figure 6. Changes of susceptibility of body injuries during a fall before therapy (measuring using 1 task of STBIDF) and after every six months of therapy measured in FSF test

SBIDF's indicator value for each of six months block of therapy sessions correlated on low level with attendance on therapy sessions (0.241). In forced simulated fall test after first six months of therapy tested subjects reduced motor control errors in comparison with first task of STBIDF before therapy, making only one or two hand errors or making none. During next block of therapy they made the same errors (Figure 6). Indicator of susceptibility of body injuries during a fall in FSF test correlated on high level with attendance for specific block of therapy sessions (0.838).

Conclusions Applied innovative cognitive-behavioural kinesiotherapy allow to suppose, that inclusion of systematic (2-3 times a week) safe fall exercises could increase motor safety (*which is the consciousness of the person undertaking to solve a motor task or consciousness the subject who has the right to encourage and even enforce from this person that would perform the motor activity, who is able to do it without the risk of the loss of life, injuries or other adverse health effects* [5]) of people with mental impairment and intercurrent psychical disorders during their daily physical activity. Differences in progress in reducing SBIDF may be connected not only with neurological aspects of motor control, but also with specificity of mental disorders. Specificity of those disorder justified opinion, that inclusion of safe fall exercises only at adult age makes reducing susceptibility of body injuries during a fall to low level impossible in applied time frame of therapy. All aspects of this therapy require cooperation of specialist from field of kinesiotherapy, neurology and psychiatry.

Keywords: cognitive-behavioural kinesiotherapy • mental disorders • safe fall method exercises

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