# Takojšnji vpliv masaže stopala na ravnotežje in hitrost hoje pri pacientih po možganski kapi

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**Uvod:** Zmanjšane gibalne sposobnosti in okvare senzibilitete se pri pacientih po možganski kapi odražajo v slabšem nadzoru drže in spremenjeni hitrosti ter mehaniki hoje (1). Predvideva se, da različne senzorične spodbude, med katere spada tudi masaža, lahko vplivajo na povečanje senzibilitete in izboljšanje gibalnih sposobnosti pacientov po možganski kapi (2–5). Namen študije je bil ugotoviti, ali ima od 5- do 7-minutna klasična terapevtska masaža stopala in gležnja kratkoročne pozitivne učinke na vzdrževanje ravnotežja na eni nogi in hitrost hoje pri pacientih po možganski kapi. **Metode:** V študijo je bilo vključenih 20 pacientov po možganski kapi (starost: 53,8 ± 11,5 leta) ter 20 enako starih zdravih preiskovancev (54,7 ± 11,8 leta). Pri vseh preiskovancih je bil dva dni zapored izveden test stoje na eni nogi na trdi in mehki podlagi, z odprtimi in zaprtimi očmi, pri pacientih pa tudi test hitrosti hoje na 10 metrov (sproščena in hitra hoja). Testiranju sta sledila terapevtska masaža enega stopala, določenega z žrebom, in nato ponovno testiranje. Naslednji dan je bil postopek ponovljen, le da je bilo masirano nasprotno stopalo. Za primerjavo rezultatov za posamezno skupino preiskovancev pred masažo in po njej je bil uporabljen t-test za odvisna vzorca. **Rezultati**: V povprečju se je pri pacientih v večini pogojev testa stoje na eni nogi po masaži ravnotežje izboljšalo tako na masirani (do 4,3 s) kot na nemasirani nogi (do 5,3 s), vendar do statistično značilne razlike ni prišlo pri nobenem testnem pogoju. Prav tako se je po masaži v povprečju izboljšala hitrost hoje, vendar se je statistično značilna razlika pokazala le pri testu hitre hoje (za 0,4 s), in sicer po masaži okvarjene noge ($p \leq 0,05$). Pri zdravih preiskovancih so bila po masaži ugotovljena statistično značilna izboljšanja na masirani nogi pri stoji na mehki podlagi z zaprtimi očmi ($p \leq 0,05$), pa tudi na nemasirani nogi pri stoji na trdi podlagi z zaprtimi očmi ($p \leq 0,05$), mehki podlagi z odprtimi ($p \leq 0,05$) ter zaprtimi očmi ($p \leq 0,05$). **Zaključki**: Klasično terapevtsko masažo stopala okvarjene noge lahko priporočimo kot dodatni fizioterapevtski postopek pri pacientih po možganski kapi, saj vpliva na izboljšanje sposobnosti hitre hoje. Za potrditev učinkov in mehanizmov delovanja masaže stopala na ravnotežje in hitrost hoje so potrebne nadaljnje raziskave.

**Ključne besede**: možganska kap, ravnotežje, senzorične spodbude, masaža stopala in gležnja.

# Immediate effects of foot massage on standing balance and walking speed in stroke patients

**Background**: Motor impairments and sensory dysfunctions of patients after stroke are reflected in decreased postural control, and changed speed, and mechanics of the gait (1). It is assumed that various sensory stimulations, including massage, can increase somatosensation and improve motor abilities of patients after stroke (2-5). The purpose of the study was to establish whether a 5 to 7-minute classic therapeutic massage of the foot and ankle has short-term positive effects on one-leg stance balance and walking speed in stroke patients. **Methods**: 20 patients after stroke (age: 53.8 ± 11.5 years) and 20 equally old healthy subjects (54.7 ± 11.8 years) participated in the study. Patients and healthy subjects performed one-leg stance test on firm and compliant surface with eyes open and closed. Additionally, patients performed a 10-meter walk test with comfortable and fast speed. The assessment was performed before and after massage and for two consecutive days. The first assessment in a day was followed by a therapeutic massage of the randomly selected leg and then repeated. The other leg was massaged the next day. For comparison of the data before and after massage, a paired samples t-test was used. **Results**: After massage the average one-leg stance test performance of patients improved in most test conditions on the massaged (< 4.3 s) and the unmassaged foot (< 5.3 s); however no difference was statistically significant. After massage the average walking speed also increased, but the statistically significant difference was fined for the fast walking speed (< 0.4 s), following the massage of the impaired leg only ($p \leq 0.05$). Statistically significant improvements of one-leg stance test performance in healthy subjects were established for the massaged leg on compliant surface with eyes closed ($p \leq 0.05$), as well as for the unmassaged leg on firm surface with eyes closed ($p \leq 0.05$) and on compliant surface with eyes opened ($p \leq 0.05$) and closed ($p \leq 0.05$). **Conclusion**: We might recommend the use of therapeutic massage of the impaired foot as additional physiotherapy procedure in stroke patients, as it affects the improvement of fast gait. To confirm the mechanisms and effects of foot massage on balance and gait speed further research is needed.

**Keywords**: stroke, balance, gait, sensory stimulations, massage of foot and ankle.

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