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**Woldag H,
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Evidence-based physiotherapeutic concepts for improving arm and hand function in stroke patients: a review

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Sirs: Recently our attention was drawn by the title of Woldag and Hummelsheim's review of evidence-based physiotherapeutic concepts for improving arm and hand function in stroke patients [6]. However, when we read the review we found that the concept of "evidence" used by these authors differs from mainstream insight. Evidence is commonly rated on the basis of study designs, with Level I and Level II evidence obtained from Randomised Clinical Trials (RCTs). Other study designs produce lower levels of evidence [3]. Furthermore, in order to avoid se-

lection bias in a review, a systematic attempt should be made to retrieve all studies that have been published on the question at issue [2].

Woldag and Hummelsheim do not describe any of the methods used in their review. Consequently, the readers are left guessing about inclusion criteria, search strategy, data extraction and data synthesis. This makes it impossible to assess the validity of the reviewers' conclusions. In our opinion, the presence of selection bias is obvious. They have failed to include several highly relevant RCTs and a systematic review that have been published in well-known, indexed peer-reviewed journals such as the *Lancet* [1], *Stroke* [4] and *Clinical Rehabilitation* [5]. In fact, 10 of the 13 RCTs included in the systematic review published in *Clinical Rehabilitation* have not been mentioned by Woldag and Hummelsheim. We feel that in their review Woldag and Hummelsheim pay too much attention to their own studies, and fail to provide the readers with an unbiased overview of the literature.

References

1. Kwakkel G, Wagenaar RC, Twisk JW, Lankhorst GJ, Koetsier JC (1999) Intensity of leg and arm training after primary middle-cerebral-artery stroke: a randomised trial. *Lancet* 354:191–196

2. Mulrow CD (1994) Rationale for systematic reviews. *BMJ* 309:597–599
3. Sackett DL (1996) Levels of evidence and clinical decision making in rehabilitation. In: Basmajian JV, Banerjee SN (eds) *Clinical decision making in rehabilitation: efficacy and outcomes*. New York: Churchill Livingstone, pp 1–4
4. van der Lee JH, Wagenaar RC, Lankhorst GJ, Vogelaar TW, Devillé WL, Bouter LM (1999) Forced use of the upper extremity in chronic stroke patients: results from a single-blind randomized clinical trial. *Stroke* 30:2369–2375
5. van der Lee JH, Snels IAK, Beckerman H, Lankhorst GJ, Wagenaar RC, Bouter LM (2001) Exercise therapy for arm function in stroke patients: a systematic review of randomized controlled trials. *Clin Rehab* 15:20–31
6. Woldag H, Hummelsheim H (2002) Evidence-based physiotherapeutic concepts for improving arm and hand function in stroke patients: a review. *J Neurol* 249:518–528

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