A revised stretch for preventing nocturnal cramps and a plausible mechanism for its benefit

The study by Hallegraeff et al (2012) was of unusual interest to us, having nicely supported our uncontrolled observation that nocturnal cramps could often be prevented by prophylactic calf stretching (Daniell 1979). Differences between our stretching regimen and that which they used included the number of muscle groups stretched, the position in which each stretch was performed, and the frequency and duration of each repetition.

Hallegraeff et al (2012) stretched both calf and hamstring muscles in their study. Since most nocturnal cramps occur in the calf or small muscles of the foot (Butler et al 2002), it would be interesting to know whether hamstring stretching adds to the clinical effectiveness of any stretching intervention. We hope that studies utilising the methodological rigor demonstrated by Hallegraeff could be undertaken to better define which prophylactic stretching techniques are most effective.

Since our original observation we have modified our recommended technique to one that has been much easier for our older patients to execute; it consists of independently lowering each heel from the edge of a low step or platform using an adjacent railing to aid in maintaining balance (Figure 1). This position does not require hip or trunk flexion or sustained abdominal muscle contraction, and is easier to perform in the presence of various co-morbidities including functional balance deficits, obesity, chronic obstructive pulmonary disease, and extremity weakness. Each relaxed calf is stretched with modest intensity for 30 seconds during each of 3 repetitions separated by a few seconds of rest. This pattern may initially be repeated several times daily, and its consistent performance for several days is usually soon followed by elimination of nocturnal cramps. Following the resolution of cramps, discontinuation of stretching may be followed by the absence of cramps for many weeks. Stretching may be resumed as needed if cramps reappear. Most patients who have utilised both our earlier and newer techniques prefer the revision, and many continue regular stretching in order to prevent cramp return.

Although the pathology leading to nocturnal cramping is incompletely understood, it seems likely that plantar flexion cramps reflect suppression of the normal reciprocal reflex inhibition from dorsiflexor muscle activity, which is absent during sleep because of the profound relaxation of dorsiflexor muscles plus the common nighttime ankle position of sustained plantar flexion. The resulting increased cramping potential may be enhanced by electrolyte abnormalities, diuretic consumption, muscle fatigue, or the presence of musculo-tendon contractures related to physical inactivity (Hallegraeff et al 2012). Calf stretching may prevent cramping by modification of this calf sensitivity.

Nocturnal cramps continue to impair the quality of life for large percentages of older patients (Hawke et al 2012) and are often treated either with quinine which incurs both expense and risk, with other prescription or non-prescription drugs, or with other interventions of unproven effectiveness, many of which also incur significant expense and risk.

The potential benefits of muscle stretching for cramp prevention remain unknown to large numbers of patients (Blyton et al 2012), suggesting that wider recognition of the usefulness of prophylactic stretching may well improve the quality of life for many patients.

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References