RELAXATION OF M. TRAPEZIUS IN SITTING VS. SUPINE POSITION
R. Viir*, A. Vain°
* Ragnar Viir Ky, Helsinki/Finland
° University of Tartu, Tartu/Estonia

Introduction
The maintenance of the upright posture is well stabilised by the columna vertebralis, with its joints and ligaments but is still liable to displacement by gravity. The back muscles serve to correct such displacements. During standing or sitting there is slight continuous, intermittent or not, EMG-measured activity in the back muscles. In supported sitting, as with the elbows resting on the knees, there is no activity in the lumbar back muscles (Bogduk, 1997).

In general the results of EMG studies do not demonstrate disturbing symptoms neither in cases of neck tension syndrome nor fibromyalgia. The hypertension of muscles is also not observed (Zidar et al., 1990), but even in the usual clinical investigation palpable tense bunches of muscle fibres in the neck and back muscles, also myofascial trigger points, are observed (Simms, 1996). The direct non-invasive quantitative measurement of the tension of back muscles is inevitable to specify the role of tension in myofascial syndrome. In addition the results of myometric measurement present theoretical background for the experience of the patients treated by the author over 10 years, that simple short movements, especially if performed in horizontal position often and repeatedly in the daytime, cure the neck/back pains effectively (Viir, 1995).

The aim of the study is to demonstrate myometrically measurable difference in the tension of the m. trapezius in sitting vs. supine position.

Methods
The subjects were 8 adolescent female swimmers (age 8 - 16 years, 152.9±12.5 cm, 43.6±9.6 kg) and 11 adult women (age 61 - 85 years, 158.9±5.5 cm, 67.6±11.6 kg). On each subject the myometric measurement of the m. trapezius upper region on the left and right side of the body was performed 20 times in the relaxed supported sitting position with the arms resting in the lap and in supine position with (supported elbows and) arms in the lap. The biomechanical properties of the skeletal muscles were measured using the myometer (Vain, 1997, 2000).

Results & Discussion
In all cases the stiffness in sitting position was significantly higher (Fig. 1) than in supine position (p<0.01). In the group of adults the stiffness decrease in supine position was 24.8% (from 227±36 to 170.6±22.5N/m). In the group of adolescents the m. trapezius stiffness decrease was 26.8% (from 189±13.7 to 138.3±11.3N/m). The results of our study allow us to conclude that remaining in sitting position requires substantially more tension and stiffness of the even relaxed m. trapezius than in supine position. Changing the position from sitting to supine terminates the pose control function of m. trapezius and allows to use muscle activity for movements and relaxation of surplus tension.
Fig. 1. Comparison of muscle stiffness of girls and women in sitting and supine position.

References