

Effects of Support Stays in a Soft Knee Brace on Muscle Activity during Jogging

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INTRODUCTION & AIM

- Soft **knee braces** can be used to **improve** stability and lower limb loads in **jogging** [1].
- Support stays** in knee brace often make the wearing of soft knee braces **uncomfortable** [2].



AIM

Fig.1 Knee Brace and Support Stays

This study aimed to investigate the **effects of support stays on jogging** with a soft knee brace.

METHOD

Muscle activities during hogging are measured and compared in **three conditions** (Fig.2).

Participants: 10 young males
(19.6±0.663 years, 173±5.39 cm, 65.2±11.8 kg, mean±S.D.)

Task: Jogging on a Treadmill (5.7 km/h, 10 seconds, Fig.3)
(Note) Jogging time was shorter than our previous study [1]
because this study required jogging with three conditions.

Measurement:

Muscle activities of quadriceps femoris and hamstrings during jogging were measured using an electromyograph(EMG) (1 kHz).

Analysis:

Mean values of EMG were compared in three conditions by Kruskal-Wallis test and Bonferroni method (significant: $p < 0.05$).



①Brace with Support Stay

②Brace without Support Stay

③Control

Fig.2 Three Conditions

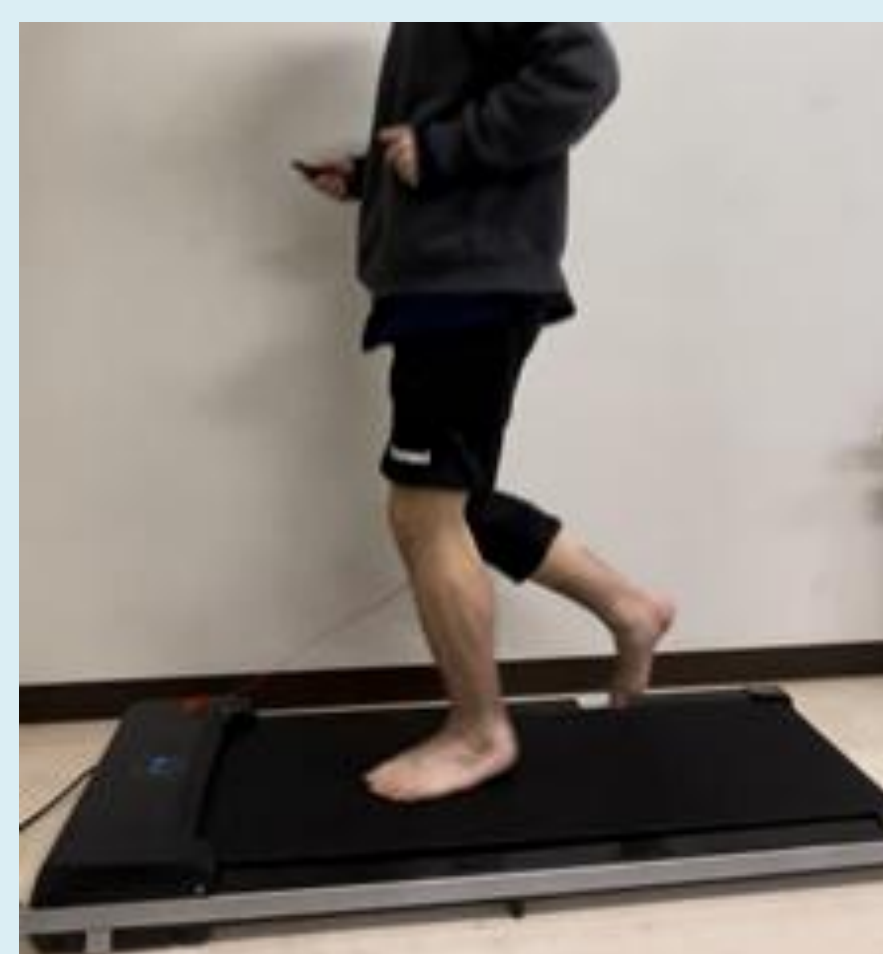
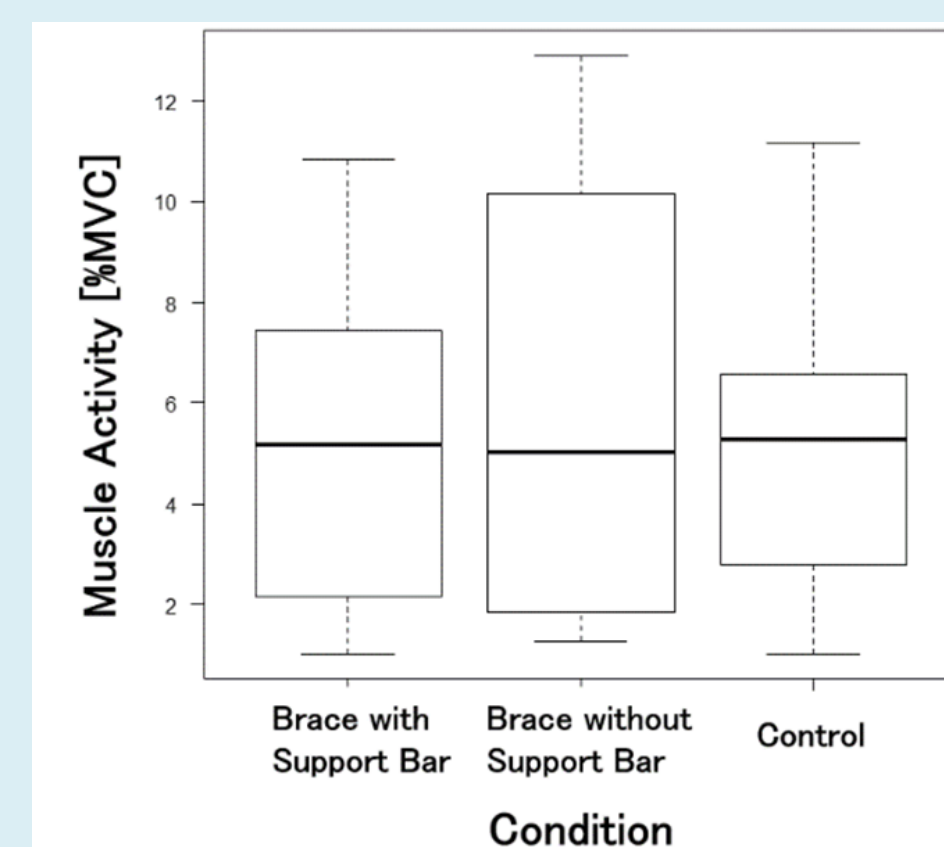


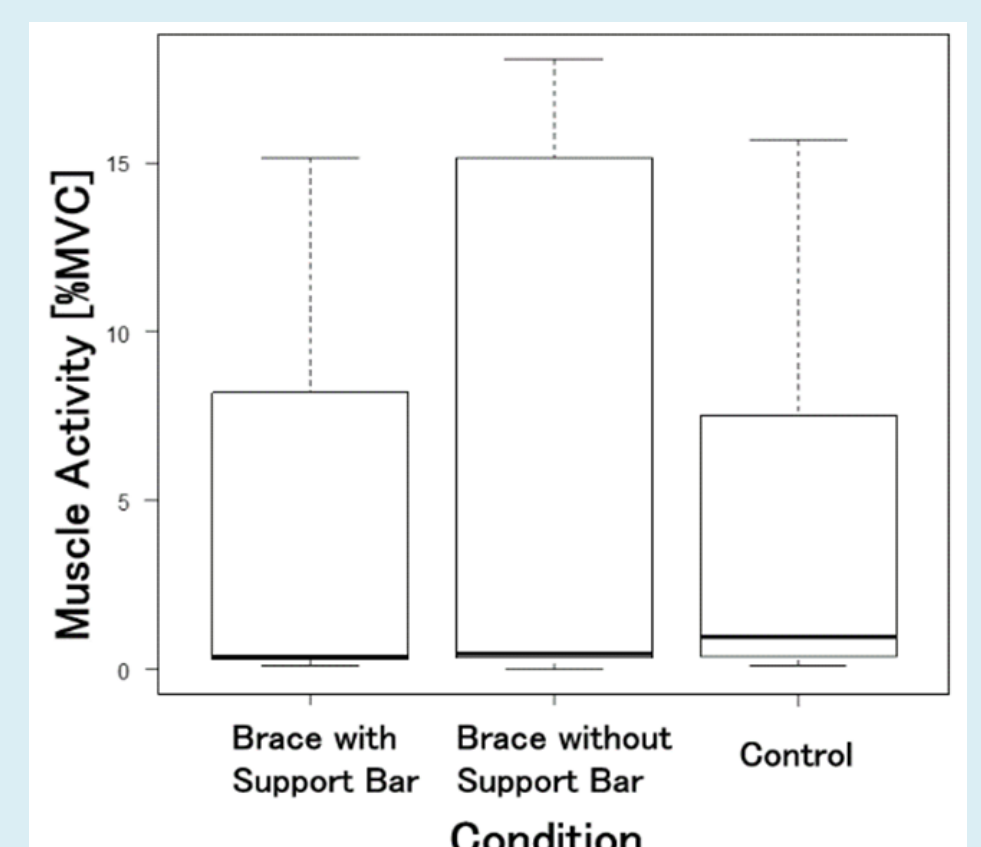
Fig.3 Jogging on a Treadmill

RESULTS & DISCUSSION

There were **no significant differences** in **muscle activities** of quadriceps femoris and hamstrings between **all conditions** (Fig.4).



(a) Quadriceps Femoris
(no significant. $p > 0.05$)



(b) Hamstrings
(no significant. $p > 0.05$)

Fig.4 Muscle Activities during Jogging

These results indicate possibility that **support stays** are **not necessary in short-term jogging** to maintain the comfort of wearing.

CONCLUSION / FUTURE WORK

- This study aimed to investigate the effects of support stays on jogging with a soft knee brace.
- The results indicate possibility that support stays are not necessary in short-term jogging to maintain the comfort of wearing.
- In the future, the effect of the support stays of soft knee braces should be investigated for more difficult or longer activities.

REFERENCES

- [1] K. Kitagawa, et al. "Effect of Soft Knee Brace on Shank Movement in Running", Journal of Prosthetics Orthotics and Science Technology, Vol.3, No.2, pp.42-47, 2024.
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Acknowledgements / Conflict of Interest

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