

Reference

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Testing ankle orthoses by means of a new plyometric technique

Sprunggelenksorthesenprüfung unter Einsatz eines neu entwickelten plyometrischen Testverfahrens – Versuchsbeschreibung und Analyse der Daten

Medizinisch Orthopädische Technik 2000, 120: 72-81

Products

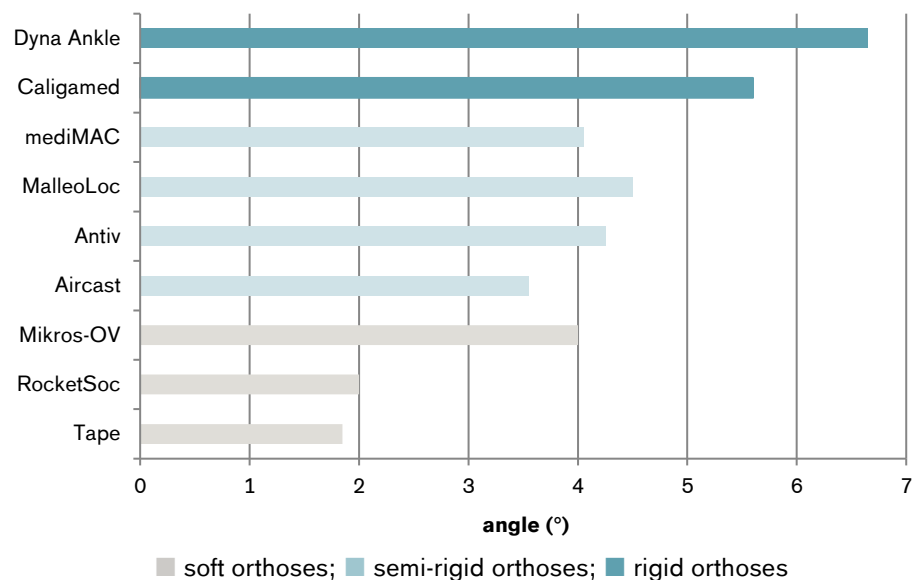
Dyna Ankle (Ottobock); Caligamed, MalleoLoc (Bauerfeind); mediMAC, RocketSoc (medi); Antiv (Röck); Aircast (Aircast); Mikros-OV (Warncke); Tape

Major Findings

With Dyna Ankle:

→ **highest reduction (6.7° or 60.5%) of supination angle of all competitor orthoses in comparison to barefoot situation**

Mean reduction of supination angle in comparison to bare-foot situation



→ **high sense of security in 15 of 19 subjects**

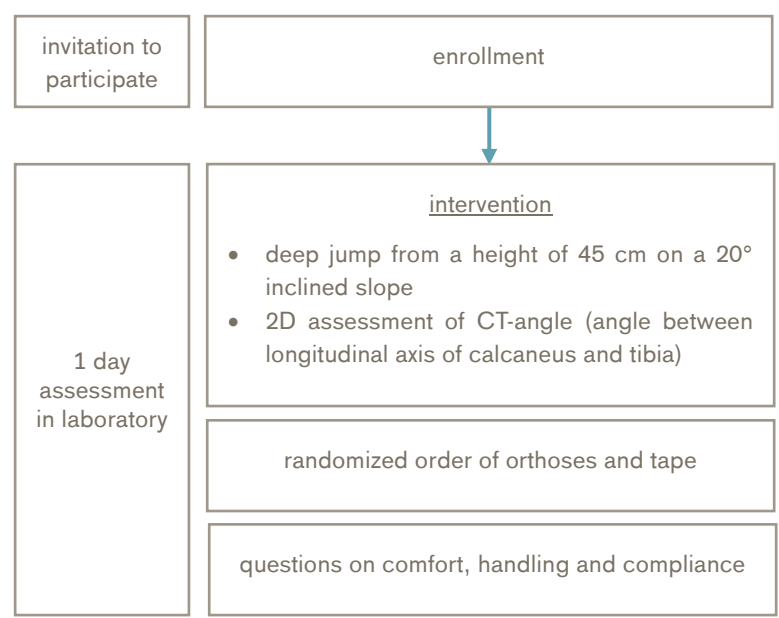
→ **good wearing comfort in 16 of 19 subjects**

→ **easy to learnable handling in 18 of 19 subjects**

→ **low to moderate feeling of restriction in 15 of 19 subjects**

Population	Subjects:	19 (14 male, 5 female) 10 healthy, 9 with known supination trauma
	Mean age:	29.0 ± 4.7 years (range 19-40 years)

Study Design Randomized crossover design with intra-individual control:



Results

Functions and Activities						Participation
Biomechanics – Static measures	Biomechanics – Gait analysis	X-Ray	EMG	Functional tests	Clinical effects	Satisfaction

Category	Outcomes	Results for Dyna Ankle and competitor products		sig.*	
Functional tests – deep jump	Supination angle	Reduction of supination angle due to intervention compared to barefoot situation		n.a.	
			Reduction (°)		Reduction (%)
		Dyna Ankle	6.7		60.5
		Caligamed	5.6		53.3
		mediMAC	4.1		36.8
		MalleoLoc	4.5		42.9
		Antiv	4.3		42.5
		Aircast	3.6		32.3
		Mikros	4.0		36.4
		RocketSoc	2.0		17.4
Tape	1.9	17.6			

Category	Outcomes	Results for Dyna Ankle and competitor products	sig.*		
Satisfaction	Sense of security	Findings from the survey of the subjects regarding the orthoses. The number of answers is shown.	n.a.		
			high	low	
		Dyna Ankle	15	4	
		Caligamed	15	4	
		mediMAC	16	3	
		MalleoLoc	12	7	
		Antiv	16	3	
		Aircast	14	5	
		Mikros	14	5	
RocketSoc	15	4			
Tape	10	9			
Wearing comfort		Findings from the survey of the subjects regarding the orthoses. The number of answers is shown.	n.a.		
			hardly irritating	somewhat irritating	irritating
		Dyna Ankle	6	10	3
		Caligamed	1	6	12
		mediMAC	12	6	1
		MalleoLoc	11	7	1
		Antiv	9	9	1
		Aircast	15	4	0
		Mikros	10	7	2
RocketSoc	10	6	3		
Tape	15	4	0		
Handling during donning and doffing		Findings from the survey of the subjects regarding the orthoses. The number of answers is shown.	n.a.		
			easy	learnable	difficult
		Dyna Ankle	8	10	1
		Caligamed	9	9	1
		mediMAC	8	9	2
		MalleoLoc	7	9	3
		Antiv	15	4	0
		Aircast	16	3	0
		Mikros	10	9	0
RocketSoc	9	10	0		
Tape	3	13	3		

Dyna Ankle (Ottobock);
Caligamed, MalleoLoc
(Bauerfeind); mediMAC,
RocketSoc (medi); Antiv
(Röck); Aircast (Aircast);
Micros-OV (Warncke);
Tape

Category	Outcomes	Results for Dyna Ankle and competitor products			sig.*
	Feeling of restriction	Findings from the survey of the subjects regarding the orthoses. The number of answers is shown.			n.a.
		low	moderate	strong	
		Dyna Ankle	7	8	4
		Caligamed	1	9	9
		mediMAC	9	10	0
		MalleoLoc	10	9	0
		Antiv	7	11	1
		Aircast	15	4	0
		Mikros	17	2	0
		RocketSoc	16	3	0
		Tape	16	3	0
	Would you wear the orthosis for a longer time?	Findings from the survey of the subjects regarding the orthoses. The number of answers is shown.			n.a.
		yes	reluctantly	no	
		Dyna Ankle	3	7	9
		Caligamed	0	6	13
		mediMAC	11	8	0
		MalleoLoc	7	10	2
		Antiv	5	12	2
		Aircast	12	7	0
		Mikros	10	6	3
		RocketSoc	11	7	1
		Tape	11	8	0

* no difference (0), positive trend (+), negative trend (-), significant (++)/(--), not applicable (n.a.)

Author's Conclusion

“The plyometric (retrograde standing jump) test procedure for determining the protective effect of ankle joint orthoses has the advantage of simulating the supination stress situation as far as possible. Eight commonly available braces and classical taping were analysed in view of observing the supination that occurs during landing. The orthoses of the rigid group effectively have the most favourable absolute protective effect, whereby wearing comfort of the Caligamed has to be significantly reduced compared to the Dyna Ankle.” (Matussek et al. 2000)

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