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The Ankle-GO score is linked to the likelihood of achieving coper status following a lateral ankle sprain: a 1-year prospective cohort analysis.

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Ankle-Go

Disclosure Information

Background

- Lateral ankle sprain (LAS) is common in athletes
- Up to 70% develop chronic ankle instability (CAI)
- Only ~30% become **copers** (no recurrent sprains, no giving-way, return to preinjury sport)
- No tool currently predicts who becomes a coper

Study Objectives

Primary Aim:

- Assess association between 2-month Ankle-GO score and coper status at 1 year

Secondary Aim:

- Identify other predictors (e.g., sex, function, sport level)

What Is the Ankle-GO Score?

- Composite score:
  max **25 points**
- 4 **functional tests**:
  SLS, SEBT, SHT, F8T
- 2 **questionnaires**:
  FAAM (ADL & Sport), ALR-RSI

	TESTS		RAW VALUES	POINTS	MAXIMUM SCORE
FUNCTIONAL PERFORMANCE TESTING	Single leg stance test (SLS)		> 3 errors	0	3
			1 - 3 errors	1	
			0 error	2	
			No apprehension	+1	
	Star excursion balance test (SEBT)		< 90%	0	7
			90 - 95%	2	
			> 95%	4	
			Anterior (ANT) > 60 %	+1	
			Posteromedial (PM) > 90 %	+1	
			No apprehension	+1	
	Side hop Test (SHT)		> 13 s	0	5
			10 - 13 s	2	
			< 10 s	4	
			No apprehension	+1	
	Figure-of-8 hop Test (F8T)		> 18 s	0	3
			13 - 18 s	1	
			< 13 s	2	
			No apprehension	+1	
PATIENT REPORTED OUTCOME MEASURE	Foot and Ankle Ability Measure (FAAM)	Activities of Daily Living	< 90 %	0	2
			90 – 95 %	1	
			> 95 %	2	
		Sport	< 80 %	0	2
			80 – 95 %	1	
			> 95 %	2	
	Ankle ligament reconstruction-return to sport after injury (ALR-RSI)		< 55 %	0	3
			55-63 %	1	
			63 – 76 %	2	
			> 76 %	3	
Ankle-GO	25				

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Study Design

- **Design:** Prospective cohort (2021–2022)
- **Setting:** Clinique du Sport, Paris
- **Participants:** 64 LAS patients (age ~34, 56% female)

Follow-up: 1 year (phone interview)

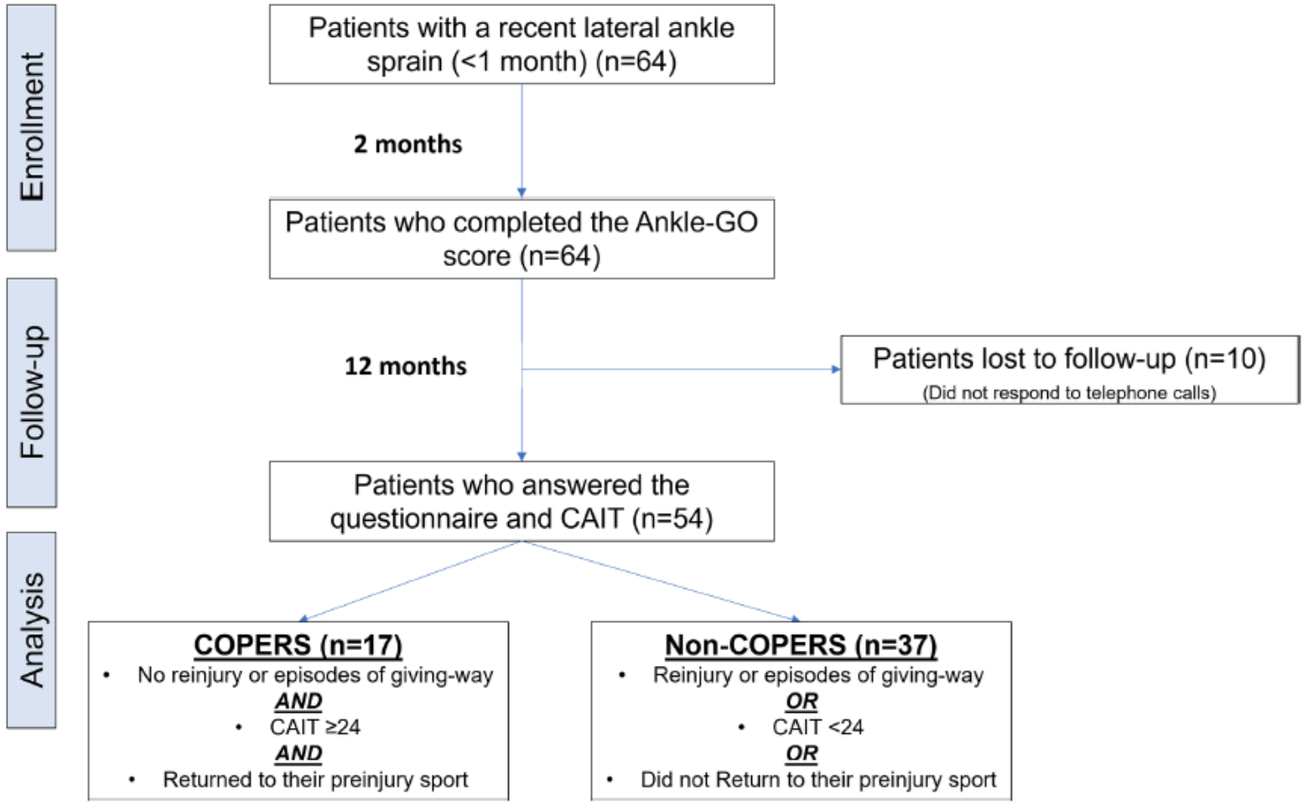

Figure 1 Flowchart of inclusion and analysis. CAIT, Cumberland Ankle Instability Tool.

Participant Characteristics

- At 12 months:
  - **Copers** = 17 (31.5%)
  - **Non-copers** = 37 (68.5%)

Copers = No giving-way, no recurrence, CAIT ≥ 24, RTS

Table 1 Participants baseline characteristics (means±SD or median and IQR for non-parametric tests) and comparisons between copers and non-copers 1 year after lateral ankle sprain

Participants at baseline (n=64)			
Sex	36 females (56%) and 28 males (44%)		
Age (years)	34.8±13.2		
Type of sport, n (%)			
Pivot contact	19 (30%)		
Pivot	22 (34%)		
In line	23 (36%)		
Level of sport, n (%)			
Professional	2 (3%)		
Intensive (>6 hours per week)	21 (33%)		
Regular (2–6 hours per week)	34 (53%)		
Casual (<2 hours per week)	7 (11%)		
Total protocol completion (n=54 patients)			
Lost to follow-up	10/64 patients (15%)		
	Copers, n=17 (31%)	Non-copers, n=37 (62%)	P value
Sex (males/females)	11/6	12/25	0.026
Age (years)*	27±19	34±15	0.285
Ankle-GO (points)	9.9±4.9	6.9±3.7	0.015
Type of sport, n (%)			
Pivot contact	6 (35%)	9 (24%)	0.677
Pivot	3 (18%)	9 (24%)	
In line	8 (47%)	19 (52%)	
Level of sport, n (%)			
Professional	1 (6%)	1 (3%)	0.869
Intensive (>6 hours per week)	6 (35%)	12 (32%)	
Regular (2–6 hours per week)	8 (47%)	21 (57%)	
Casual (<2 hours per week)	2 (12%)	3 (8%)	

*Non-parametric test (data are expressed in median and IQR with Mann-Whitney U tests).

Key Results:
Ankle-GO Score Predicts Outcome

AUC = **0.70** → fair predictive ability

Cut-off = 11 points

- >11 → coper likelihood ↑ from 28% to 69%
- <11 → coper likelihood ↓ to 6.8%

Table 2 2×2 contingency table of coper status and Ankle-GO score

Ankle-GO >11 points	Copers	Non-copers	Total
YES	9 (69%)	4 (31%)	13
NO	8 (19%)	33 (81%)	41
Total	17	37	54

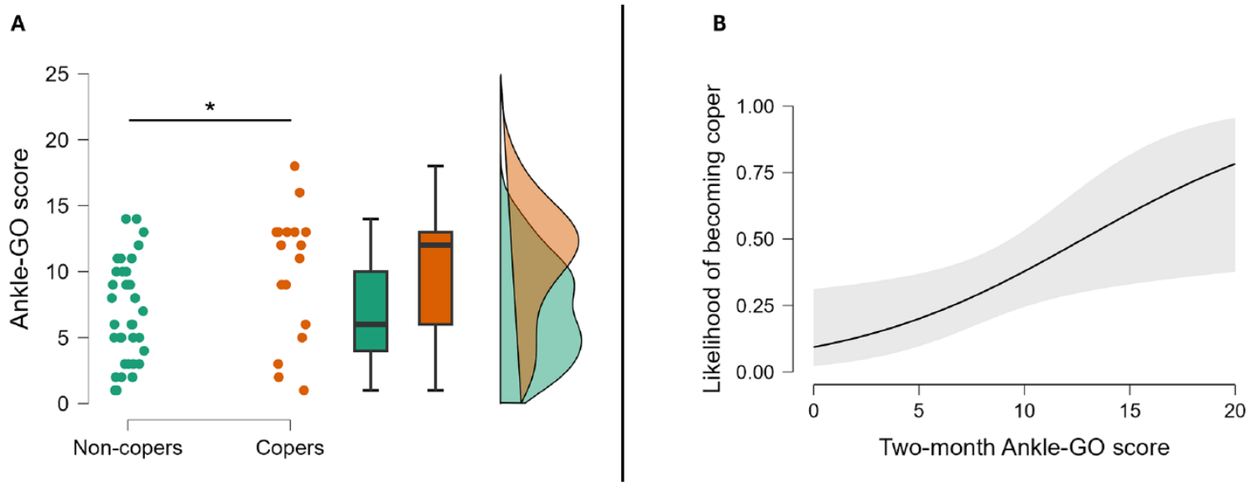

Figure 2 (A) Ankle-GO scores at 2 months among copers and non-copers 1 year after lateral ankle sprain injury. (B) Estimate plot of the probability to become coper according to 2-month Ankle-GO score. *p=0.015 The shaded area represents the 95% CIs.

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Secondary Findings

- Males → **×5 more likely** to become copers (OR = 5.2)
- Other predictors not statistically significant
- No single test/item predicted outcome – **total score matters**

Table 3 Distribution of the raw values (mean±SD or median±IQR for non-parametric tests) of the 2-month Ankle-GO score according to the recovery status (copers vs non-copers) 1 year after lateral ankle sprain

	Copers (n=17)	Non-copers (n=37)	P value
$FAAM_{adl}$ (%)*	92.9±8.3	84.5±14.3	0.058
$FAAM_{sport}$ (%)*	71.9±34.4	59.4±34.4	0.097
ALR-RSI (%)*	55.8±46.7	46.7±29.2	0.083
SLS (errors)*	2±4	4±3	0.232
SEBT COMP (%)	82.3±6.2	78.4±7.8	0.079
SEBT ANT (%)	63±5.2	59.2±7.2	0.054
SEBT PM (%)	95.2±7.1	90.7±9.1	0.079
SEBT PL (%)	90.3±9.9	85.3±11	0.118
SHT (s)	17.5±11.2	23.7±11.2	0.065
F8T (s)*	14.5±5	19±16	0.057

*Non-parametric test (data are expressed in median and IQR with Mann-Whitney U tests).
ALR-RSI, Ankle Ligament Reconstruction Return to Sport after Injury; ANT, Anterior; COMP, Composite score; $FAAM_{adl\text{-}sport}$, Foot and Ankle Ability Measures-Activities of daily living & sport subscales; F8T, Figure of Eight Test; PL, posterolateral; PM, posteromedial; SEBT, Star Excursion Balance Test; SHT, Side Hop Test; SLS, Single Leg Stance.

Discussion

- No single Ankle-GO item predicted outcome → **full score is key**
- **<14 pts** → no patient became coper
- **Female sex** = independent risk factor
- RTS criteria must go beyond time-based decisions

Clinical Implications

- ✓ Use Ankle-Go during RTS decision-making
- ✓ >11 pts = safe RTS
- ✓ <11 pts and female → more rehab before RTS
- ✓ Online calculator: anklego.com or QR code

Conclusion

- Ankle-Go is a **useful RTS tool** after LAS
- Predicts long-term **coper status**
- **>11 points** → ×12 increased chance of full recovery
- **>11 points and ♂** → best predictors
- Further research needed in elite athletes and rehab protocols

References:

1 Fong DT-P, Hong Y, Chan L-K, et al. A systematic review on ankle injury and ankle sprain in sports. Sports Med 2007;37:73–94.
2 Doherty C, Delahunt E, Caulfield B, et al. The incidence and prevalence of ankle sprain injury: a systematic review and meta-analysis of prospective epidemiological studies. Sports Med 2014;44:123–40.
3 Gribble PA, Bleakley CM, Caulfield BM, et al. 2016 consensus statement of the international ankle consortium: prevalence, impact and long-term consequences of lateral ankle sprains. Br J Sports Med 2016;50:1493–5.
4 Attenborough AS, Hiller CE, Smith RM, et al. Chronic ankle instability in sporting populations. Sports Med 2014;44:1545–56.
5 Hertel J, Corbett RO. An updated model of chronic ankle instability. J Athl Train 2019;54:572–88.
6 Martin RL, Davenport TE, Fraser JJ, et al. Ankle stability and movement coordination impairments: lateral ankle ligament sprains revision 2021: clinical practice guidelines linked to theinternational classification of functioning, disability and health from the academy of orthopaedic physical therapy of the American physical therapy association. J Orthop Sports Phys ThAer 2021;51.
7 Anandacoomarasamy A, Barnsley L. Long term outcomes of inversion ankle injuries. Br J Sports Med 2005;39:e14.
8 Konradsen L, Bech L, Ehrenbjerg M, et al. Seven years follow-up after ankle inversion trauma. Scand J Med Sci Sports 2002;12:129–35.
9 Hong CC, Calder J. The Burden of the "Simple Ankle Sprains": a review of the epidemiology and long-term impact. Foot Ankle Clin 2023;28:187–200.
10 Golditz T, Steib S, Pfeifer K, et al. Functional ankle instability as a risk factor for osteoarthritis: using T2-mapping to analyze early cartilage degeneration in the ankle joint of young athletes. Osteoarthr Cartil 2014;22:1377–85.
11 Wikstrom EA, Brown CN. Minimum reporting standards for copers in chronic ankle instability research. Sports Med 2014;44:251–68.
12 Doherty C, Bleakley C, Hertel J, et al. Dynamic balance deficits 6 months following first-time acute lateral ankle sprain: a laboratory analysis. J Orthop Sports Phys Ther 2015;45:626–33.
13 Doherty C, Bleakley C, Hertel J, et al. Lower limb interjoint postural coordination one year after first-time lateral ankle sprain. Med Sci Sports Exerc 2015;47:2398–405.
14 McCann RS, Crossett ID, Terada M, et al. Hip strength and star excursion balance test deficits of patients with chronic ankle instability. J Sci Med Sport 2017;20:992–6.
15 Pourkazemi F, Hiller CE, Raymond J, et al. Predictors of chronic ankle instability after an index lateral ankle sprain: a systematic review. J Sci Med Sport 2014;17:568–73.
16 Doherty C, Bleakley C, Hertel J, et al. Recovery from a first-time lateral ankle sprain and the predictors of chronic ankle instability: a prospective cohort analysis. Am J Sports Med 2016;44:995–1003.
17 Terrier P, Piotton S, Punt IM, et al. Predictive factors of recovery after an acute lateral ankle sprain: a longitudinal study. Sports (Basel) 2021;9:41.
18 Wikstrom EA, Tillman MD, Chmielewski TL, et al. Discriminating between copers and people with chronic ankle instability. J Athl Train 2012;47:136–42.
19 Tassignon B, Verschueren J, Delahunt E, et al. Criteria-based return to sport decision-making following lateral ankle sprain injury: a systematic review and narrative synthesis. Sports Med 2019;49:601–19.
20 McCann R, Kosik K, Terada M, et al. Residual impairments and activity limitations at return to play from a lateral ankle sprain. Int J Athl Ther Train 2018;23:83–8.
21 Smith MD, Vicenzino B, Bahr R, et al. Return to sport decisions after an acute lateral ankle sprain injury: introducing the PAASS framework-an international multidisciplinary consensus. Br J Sports Med 2021;55:1270–6.
22 Wikstrom EA, Mueller C, Cain MS. Lack of consensus on return-to-sport criteria following lateral ankle sprain: a systematic review of expert opinions. J Sport Rehabil 2020;29:231–7.
23 Lam KC, Marshall AN, Bay RC, et al. Patient-reported outcomes at return to sport after lateral ankle sprain injuries: a report from the athletic training practice-based research network. J Athl Train 2023;58:627–34.
24 Picot B, Lopes R, Rauline G, et al. Development and validation of the ankle-go score for discriminating and predicting return-to-sport outcomes after lateral ankle sprain. Sports Health 2024;16:47–57.
25 Picot B, Fourchet F, Lopes R, et al. Low ankle-go score while returning to sport after lateral ankle sprain leads to a 9-fold increased risk of recurrence: a two-year prospective cohort study. Sports Med Open 2024;10:23.
26 Thompson JY, Byrne C, Williams MA, et al. Prognostic factors for recovery following acute lateral ankle ligament sprain: a systematic review. BMC Musculoskelet Disord 2017;18:421.
27 Mason J, Kniewasser C, Hollander K, et al. Intrinsic risk factors for ankle sprain differ between male and female athletes: a systematic review and meta-analysis. Sports Med Open 2022;8:139.
28 Delahunt E, Remus A. Risk factors for lateral ankle sprains and chronic ankle instability. J Athl Train 2019;54:611–6.
29 Gribble PA, Delahunt E, Bleakley C, et al. Selection criteria for patients with chronic ankle instability in controlled research: a position statement of the International Ankle Consortium. Br J Sports Med 2014;48:1014–8.
30 Netterström-Wedin F, Bleakley C. Diagnostic accuracy of clinical tests assessing ligamentous injury of the ankle syndesmosis: a systematic review with meta-analysis. Phys Ther Sport 2021;49:214–26.
31 Netterström-Wedin F, Matthews M, Bleakley C. Diagnostic accuracy of clinical tests assessing ligamentous injury of the talocrural and subtalar joints: a systematic review with meta-analysis. Sports Health 2022;14:336–47.
32 Obuchowski NA, McClish DK. Sample size determination for diagnostic accuracy studies involving binormal ROC curve indices. Stat Med 1997;16:1529–42.
33 Riemann BL, Caggiano NA, Lephart SM. Examination of a clinical method of assessing postural control during a functional performance task. J Sport Rehabil 1999;8:171–83.
34 Gribble PA, Hertel J, Plisky P. Using the Star Excursion Balance Test to assess dynamic postural-control deficits and outcomes in lower extremity injury: a literature and systematic review. J Athl Train 2012;47:339–57.
35 Docherty CL, Arnold BL, Gansneder BM, et al. Functional-performance deficits in volunteers with functional ankle instability. J Athl Train 2005;40:30–4.
36 Caffrey E, Docherty CL, Schrader J, et al. The ability of 4 single-limb hopping tests to detect functional performance deficits in individuals with functional ankle instability. J Orthop Sports Phys Ther 2009;39:799–806.
37 Martin RL, Irrgang JJ, Burdett RG, et al. Evidence of validity for the Foot and Ankle Ability Measure (FAAM). Foot Ankle Int 2005;26:968–83.
38 Picot B, Grimaud O, Rauline G, et al. Validity and reproducibility of the ARL-RSI score to assess psychological readiness before returning to sport after lateral ankle sprain. J Exp Orthop 2024;11:e12073.
39 Bahr R, Clarsen B, Derman W, et al. International Olympic Committee consensus statement: methods for recording and reporting of epidemiological data on injury and illness in sport 2020 (including STROBE Extension for Sport Injury and Illness Surveillance (STROBE-SIIS)). Br J Sports Med 2020;54:372–89.
40 Carcia CR, Martin RL, Drouin JM. Validity of the Foot and Ankle Ability Measure in athletes with chronic ankle instability. J Athl Train 2008;43:179–83.
41 Mansournia MA, Collins GS, Nielsen RO, et al. A checklist for statistical assessment of medical papers (the CHAMP statement): explanation and elaboration. Br J Sports Med 2021;55:1009–17.
42 Hosmer D, Lemeshow S, Sturdivant R. Model-Building Strategies and Methods for Logistic Regression. Applied Logistic Regression. John Wiley & Sons Ltd, 2013:89–151.
43 Pourkazemi F, Hiller CE, Raymond J, et al. Predictors of recurrent sprains after an index lateral ankle sprain: a longitudinal study. Physiotherapy 2018;104:430–7.
44 Lu J, Wu Z, Adams R, et al. Sex differences in the relationship of hip strength and functional performance to chronic ankle instability scores. J Orthop Surg Res 2022;17:173.
45 Watanabe K, Koshino Y, Kawahara D, et al. Kinesiophobia, self-reported ankle function, and sex are associated with perceived ankle instability in college club sports athletes with chronic ankle instability. Phys Ther Sport 2023;61:45–50.
46 Parsons JL, Coen SE, Bekker S. Anterior cruciate ligament injury: towards a gendered environmental approach. Br J Sports Med 2021;55:984–90.
47 Petrie KA, Chen JN, Miears H, et al. Gender differences in seeking health care and postintervention pain outcomes in foot and ankle orthopedic patients. Womens Health Reports 2022;3:500–7.
48 Button K, van Deursen R, Price P. Classification of functional recovery of anterior cruciate ligament copers, non-copers, and adapters. Br J Sports Med 2006;40:853–9; .
49 Ardern CL, Glasgow P, Schneiders A, et al. 2016 Consensus statement on return to sport from the first world congress in sports physical therapy, Bern. Br J Sports Med 2016;50:853–64.
50 Hiller CE, Refshauge KM, Herbert RD, et al. Intrinsic predictors of lateral ankle sprain in adolescent dancers: a prospective cohort study. Clin J Sport Med 2008;18:44–8.
51 van Rijn RM, van Os AG, Bernsen RMD, et al. What is the clinical course of acute ankle sprains? A systematic literature review. Am J Med 2008;121:324–31.

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