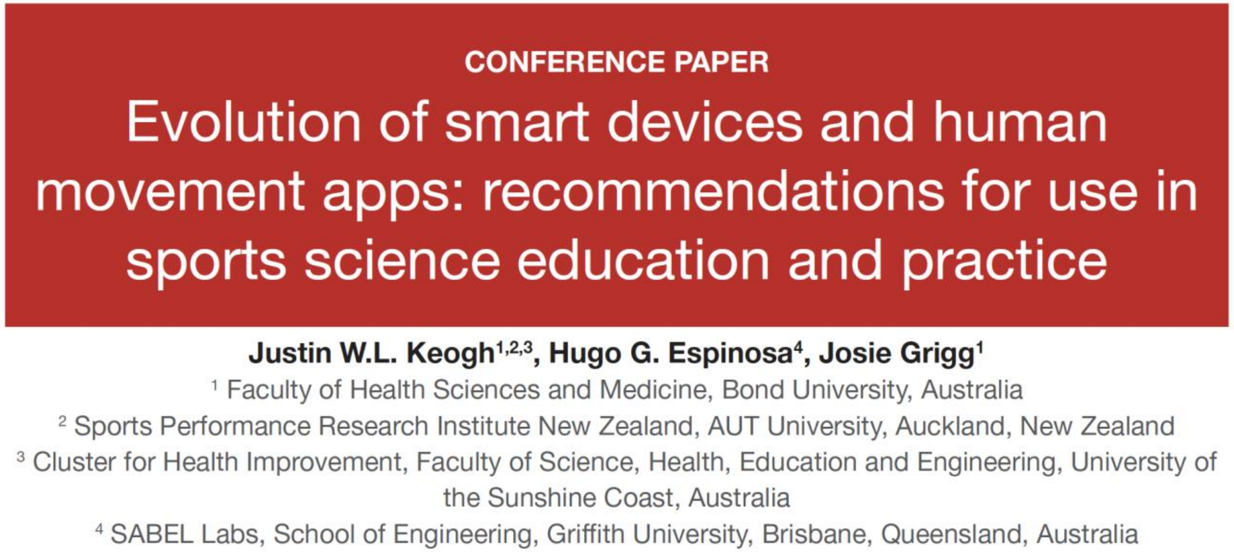
Tecnologías aplicadas al análisis del movimiento

Antonio López Fuenzalida



CONFERENCE PAPER

Evolution of smart devices and human movement apps: recommendations for use in sports science education and practice

Justin W.L. Keogh[1,2,3], **Hugo G. Espinosa**[4], **Josie Grigg**[1]
[1] Faculty of Health Sciences and Medicine, Bond University, Australia
[2] Sports Performance Research Institute New Zealand, AUT University, Auckland, New Zealand
[3] Cluster for Health Improvement, Faculty of Science, Health, Education and Engineering, University of the Sunshine Coast, Australia
[4] SABEL Labs, School of Engineering, Griffith University, Brisbane, Queensland, Australia

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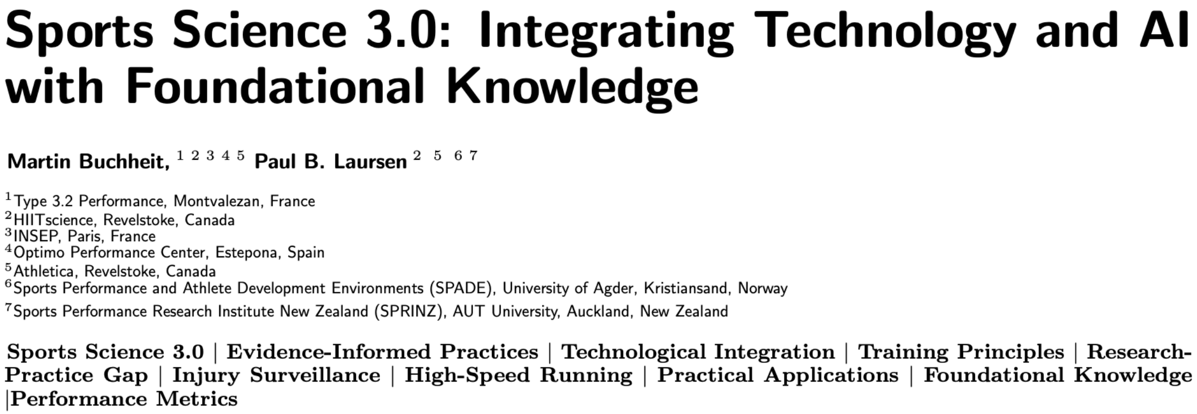

Sports Science 3.0: Integrating Technology and AI with Foundational Knowledge

Martin Buchheit, [1 2 3 4 5] **Paul B. Laursen** [2 5 6 7]

[1] Type 3.2 Performance, Montvalezan, France
[2] HIITscience, Revelstoke, Canada
[3] INSEP, Paris, France
[4] Optimo Performance Center, Estepona, Spain
[5] Athletica, Revelstoke, Canada
[6] Sports Performance and Athlete Development Environments (SPADE), University of Agder, Kristiansand, Norway
[7] Sports Performance Research Institute New Zealand (SPRINZ), AUT University, Auckland, New Zealand

Sports Science 3.0 | Evidence-Informed Practices | Technological Integration | Training Principles | Research-Practice Gap | Injury Surveillance | High-Speed Running | Practical Applications | Foundational Knowledge |Performance Metrics

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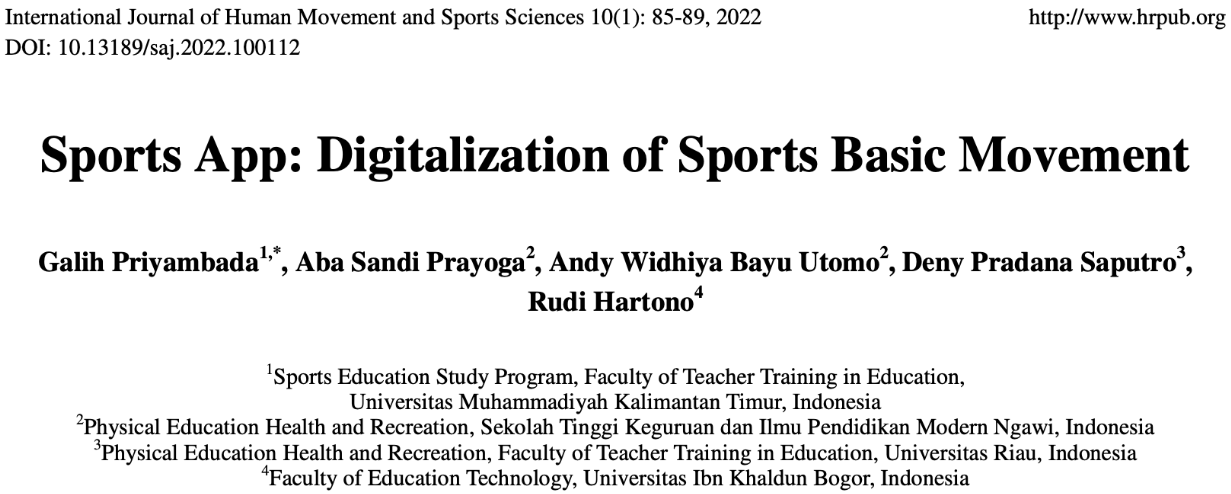
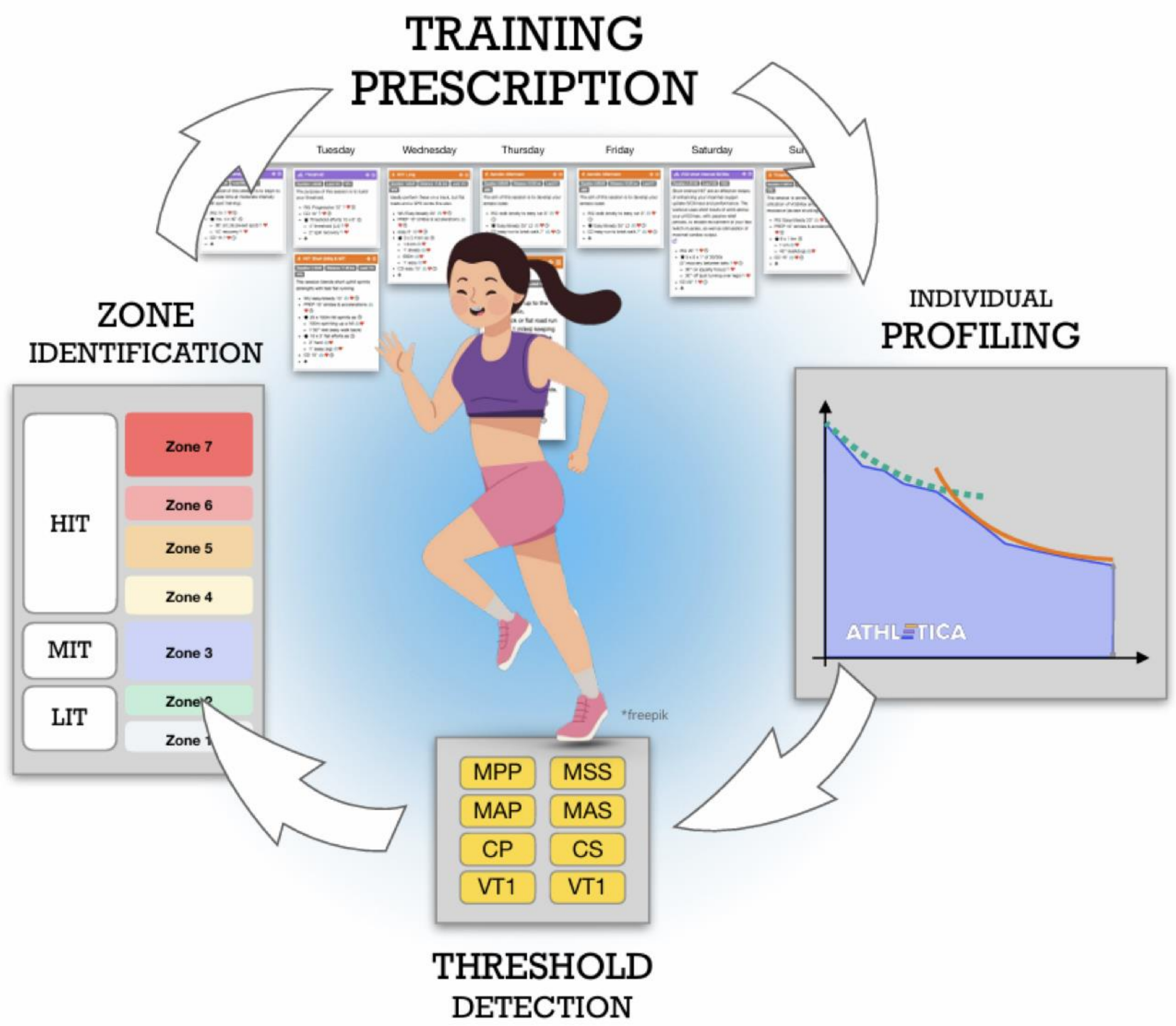


International Journal of Human Movement and Sports Sciences 10(1): 85-89, 2022 http://www.hrpub.org
DOI: 10.13189/saj.2022.100112

Sports App: Digitalization of Sports Basic Movement

Galih Priyambada[1,*], **Aba Sandi Prayoga**[2], **Andy Widhiya Bayu Utomo**[2], **Deny Pradana Saputro**[3], **Rudi Hartono**[4]

[1] Sports Education Study Program, Faculty of Teacher Training in Education,
Universitas Muhammadiyah Kalimantan Timur, Indonesia
[2] Physical Education Health and Recreation, Sekolah Tinggi Keguruan dan Ilmu Pendidikan Modern Ngawi, Indonesia
[3] Physical Education Health and Recreation, Faculty of Teacher Training in Education, Universitas Riau, Indonesia
[4] Faculty of Education Technology, Universitas Ibn Khaldun Bogor, Indonesia


Tuesday
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MAS
CP
CS
VT1
VT1

TRAINING
PRESCRIPTION

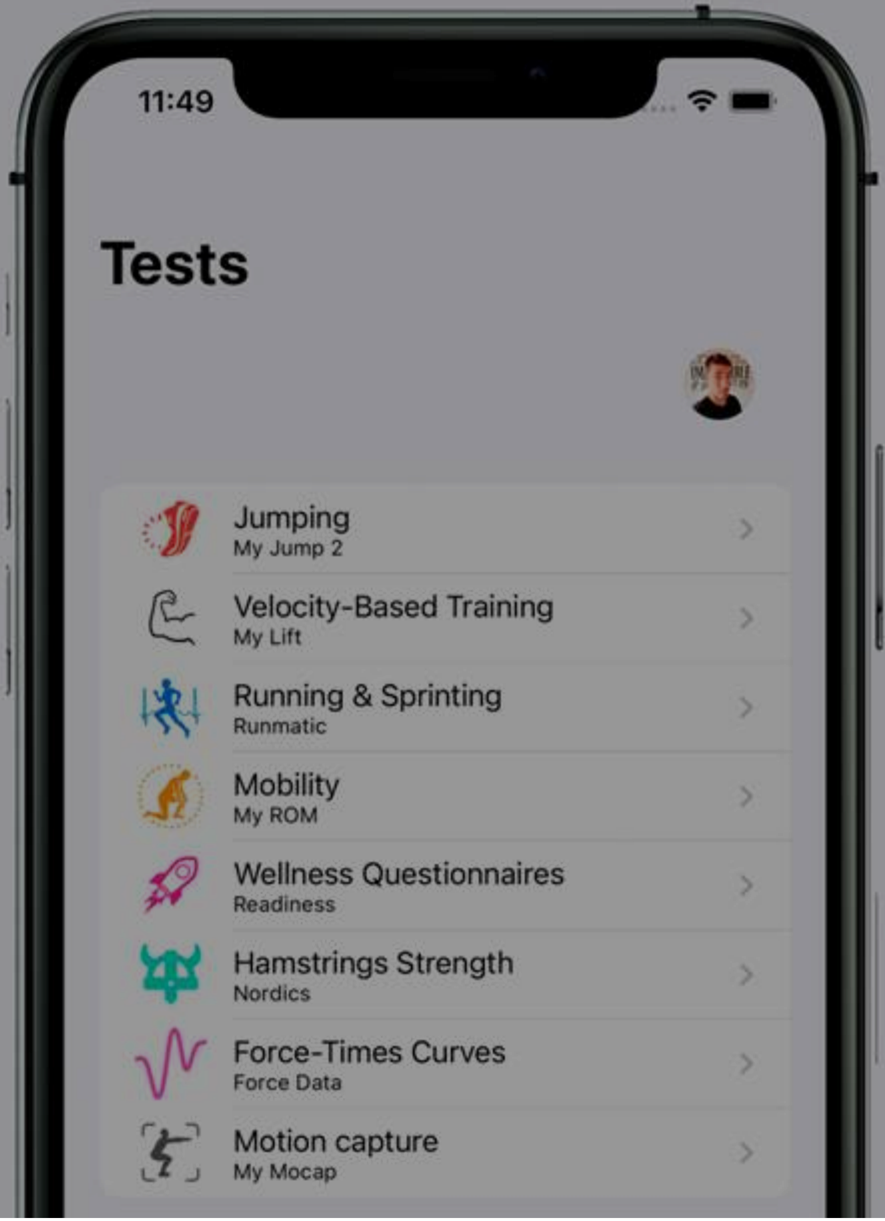
INDIVIDUAL
PROFILING

THRESHOLD
DETECTION

ZONE
IDENTIFICATION

Buchheit, M., & Laursen, P. B. (2024). **Sports Science 3.0: Integrating technology and AI with foundational knowledge**. *Sport Perform. Sci. Rep*, *231*, 1-6.

My Jump Lab



11:49

Tests

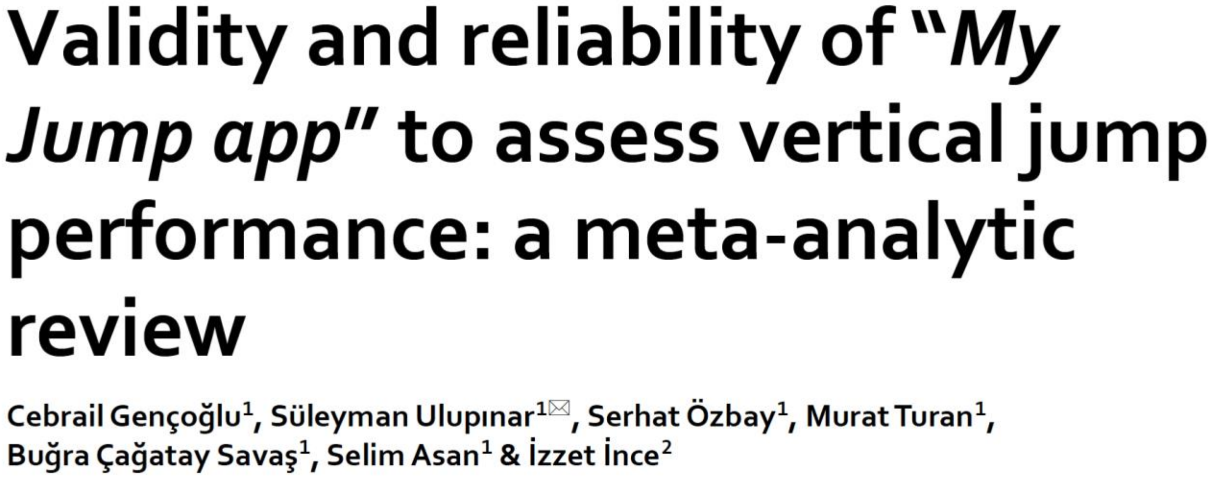
- Jumping
  My Jump 2
- Velocity-Based Training
  My Lift
- Running & Sprinting
  Runmatic
- Mobility
  My ROM
- Wellness Questionnaires
  Readiness
- Hamstrings Strength
  Nordics
- Force-Times Curves
  Force Data
- Motion capture
  My Mocap

My Jump Lab

- Salto, velocidad y sprints.
- Avalado por estudios científicos y comparaciones de laboratorio.
- Excelente concordancia con tiempo de vuelo (ICC = 0,85), altura del salto (ICC = 0,85) y buen acuerdo con la potencia máxima (ICC = 0,64) en superficies de arena.
- Confiable para la evaluación de la finalización durante la prueba de sprint curvo.

Medeiros AIA et al. (2024). **Validity and reliability of My Jump 2® app to measure the vertical jump on elite women beach volleyball players**. *PeerJ* 12:e17387

Fílter, A. et al. (2025). **The My Jump Lab application is a valid and reliable low-cost alternative to test curved sprint performance**. *Sports Biomechanics*, 1-12.

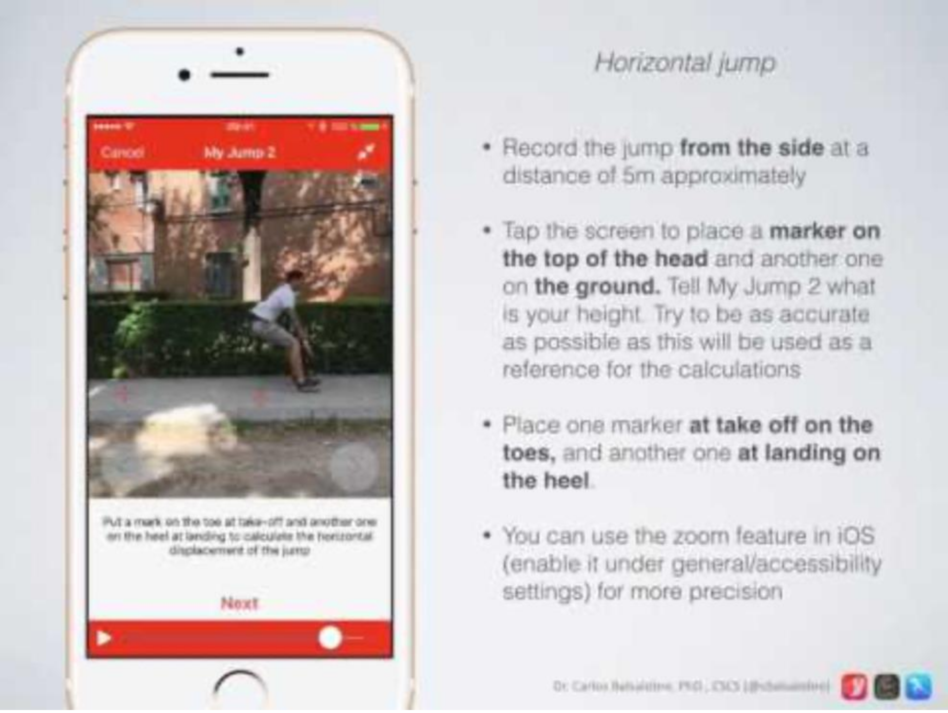


Validity and reliability of "*My Jump app*" to assess vertical jump performance: a meta-analytic review

Cebrail Gençoğlu[1], Süleyman Ulupınar[1]✉, Serhat Özbay[1], Murat Turan[1], Buğra Çağatay Savaş[1], Selim Asan[1] & İzzet İnce[2]

- La aplicación My Jump demostró puntuaciones de fiabilidad casi perfectas.
- My Jump parece ser una herramienta válida y confiable para científicos deportivos y practicantes de fuerza y acondicionamiento, ofreciendo un medio rentable y accesible para evaluar con precisión el rendimiento del salto vertical en varios entornos.
- Sin embargo, debe tenerse en cuenta que estos resultados son específicos de las medidas basadas en el tiempo de vuelo, y se necesita más investigación para validar estos hallazgos contra los métodos de velocidad de despegue estándar de oro.

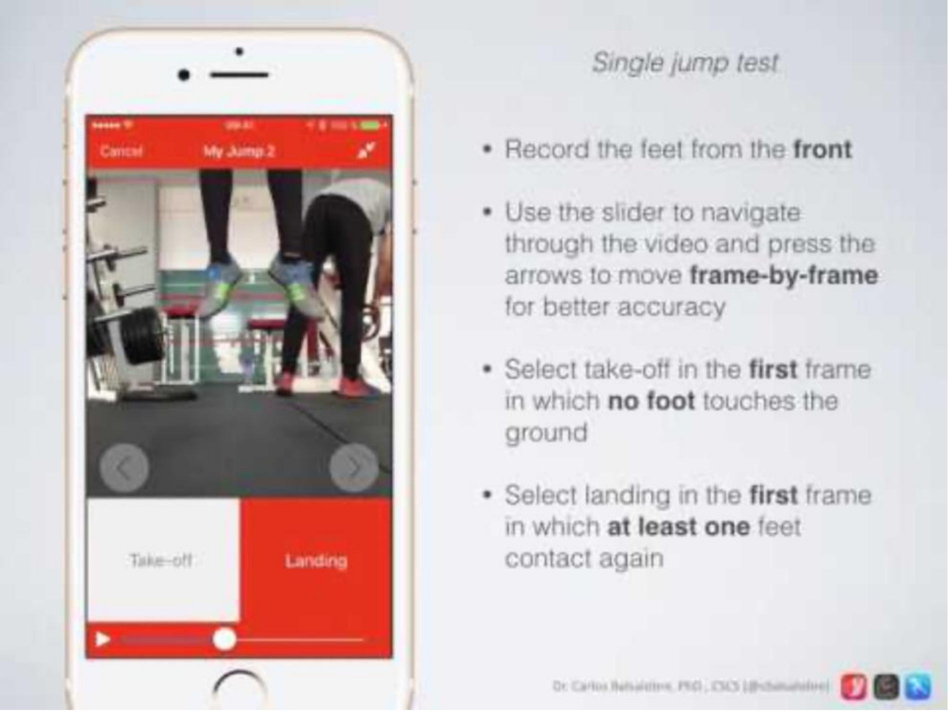
Gençoğlu, C., Ulupınar, S., Özbay, S., Turan, M., Savaş, B. Ç., Asan, S., & İnce, İ. (2023). **Validity and reliability of "My Jump app" to assess vertical jump performance: a meta-analytic review**. *Scientific reports*, *13*(1), 20137.



Put a mark on the toe at take-off and another one on the heel at landing to calculate the horizontal displacement of the jump

Horizontal jump

- Record the jump **from the side** at a distance of 5m approximately
- Tap the screen to place a **marker on the top of the head** and another one on **the ground.** Tell My Jump 2 what is your height. Try to be as accurate as possible as this will be used as a reference for the calculations
- Place one marker **at take off on the toes,** and another one **at landing on the heel**.
- You can use the zoom feature in iOS (enable it under general/accessibility settings) for more precision



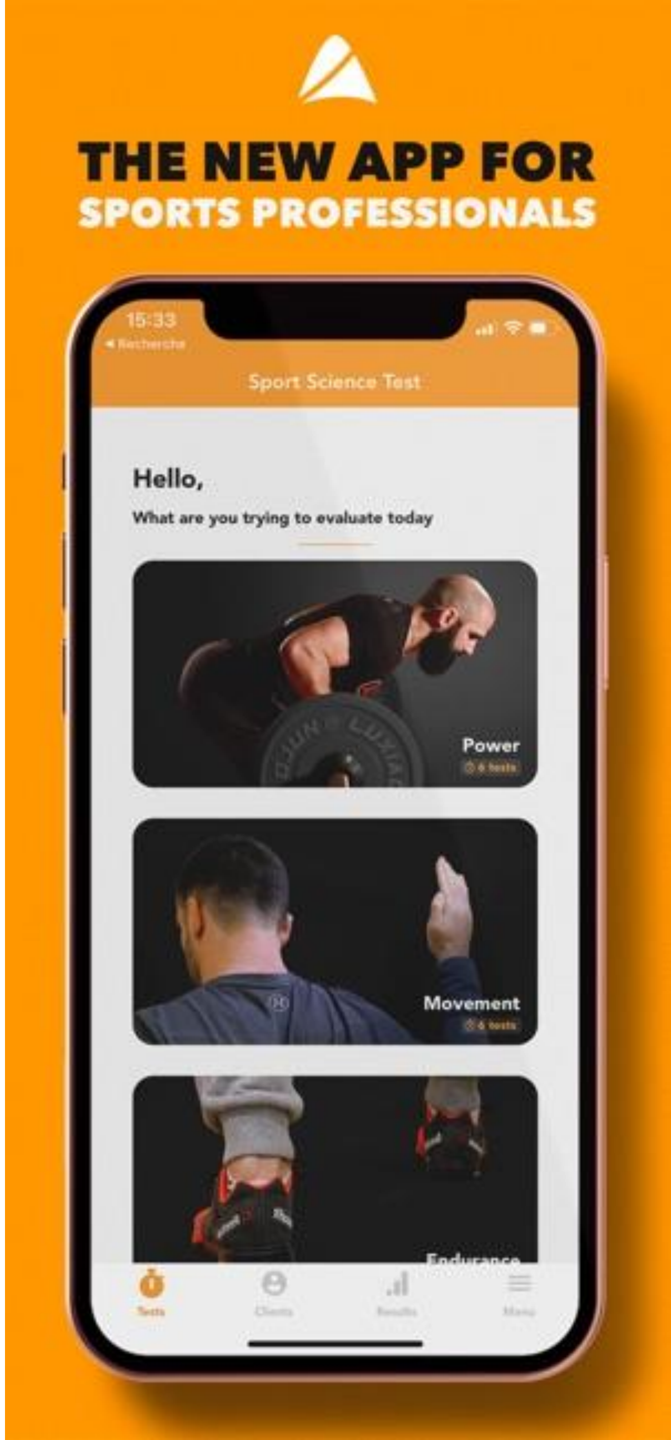
Single jump test

- Record the feet from the **front**
- Use the slider to navigate through the video and press the arrows to move **frame-by-frame** for better accuracy
- Select take-off in the **first** frame in which **no foot** touches the ground
- Select landing in the **first** frame in which **at least one** feet contact again

Sport Science Test

- Test biomecánicos y fisiológicos.
- Protocolos publicados en ciencia.

Aurélien Broussal-Derval
ABD Formation Conseil
Identifiant ou e-mail
Mot de passe
JE SORS
UNE APP !
Télécharger dans l'App Store
DISPONIBLE SUR Google Play


THE NEW APP FOR
SPORTS PROFESSIONALS
15:33
Recherche
Sport Science Test
Hello,
What are you trying to evaluate today
Power
6 tests
Movement
6 tests
Endurance
Tests
Clients
Results
Menu

Kinovea

- Video análisis general.
- Demuestra una variación promedio menos del 10%, confirmando confiabilidad de los resultados.
- Utilizado como complemento en pruebas funcionales como FMS.
- El método con smartphone es un instrumento válido y confiable para monitorear rendimiento en salto en diversas poblaciones sanas.

Nor Adnan, N. M. et al. (2018, April). **Biomechanical analysis using Kinovea for sports application**. In *IOP conference series: materials science and engineering* (Vol. 342, p. 012097). IOP Publishing

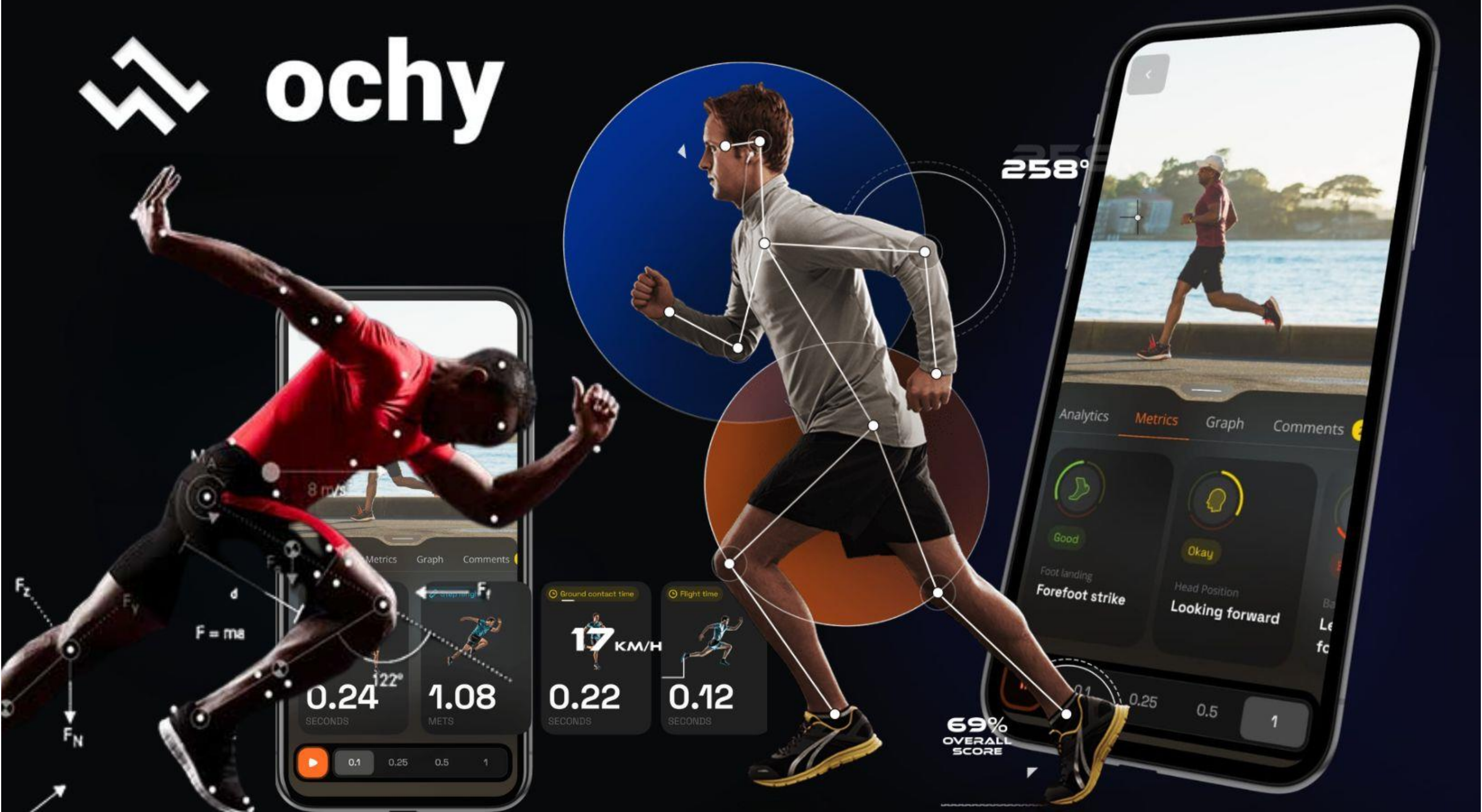
García, T. C. G. et al. (2023, November). **Biomechanical analysis of functional movement in athletes using Kinovea**. In *International Conference on e-Health and Bioengineering* (pp. 469-477). Cham: Springer Nature Switzerland.

Pueo, B. et al. (2020). **Validity, reliability and usefulness of smartphone and kinovea motion analysis software for direct measurement of vertical jump height**. *Physiology & Behavior*, *227*, 113144.

3.57
145.7
116.6

Dr. Gary Chow (HPE, EdUHK, HK)

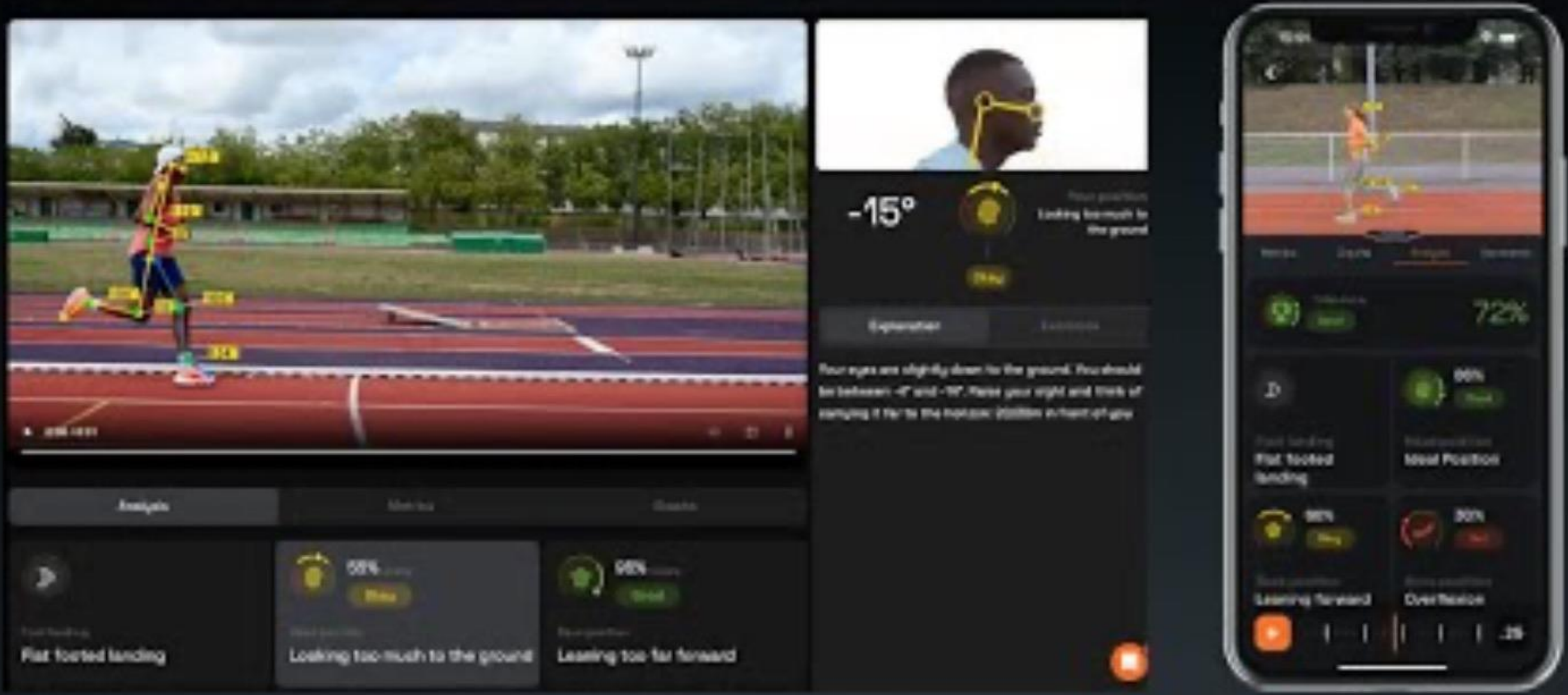
ochy


258°
Analytics
Metrics
Graph
Comments
Good
Foot landing
Forefoot strike
Okay
Head Position
Looking forward
0.1
0.25
0.5
1
69%
OVERALL SCORE
8 m/s
M_A
F_Z
F_N
F = ma
d
122°
Step length
Ground contact time
Flight time
17 KM/H
0.24
SECONDS
1.08
METS
0.22
SECONDS
0.12
SECONDS
0.1
0.25
0.5
1

ochy

Advanced AI Technology

Running Form & Gait Analysis

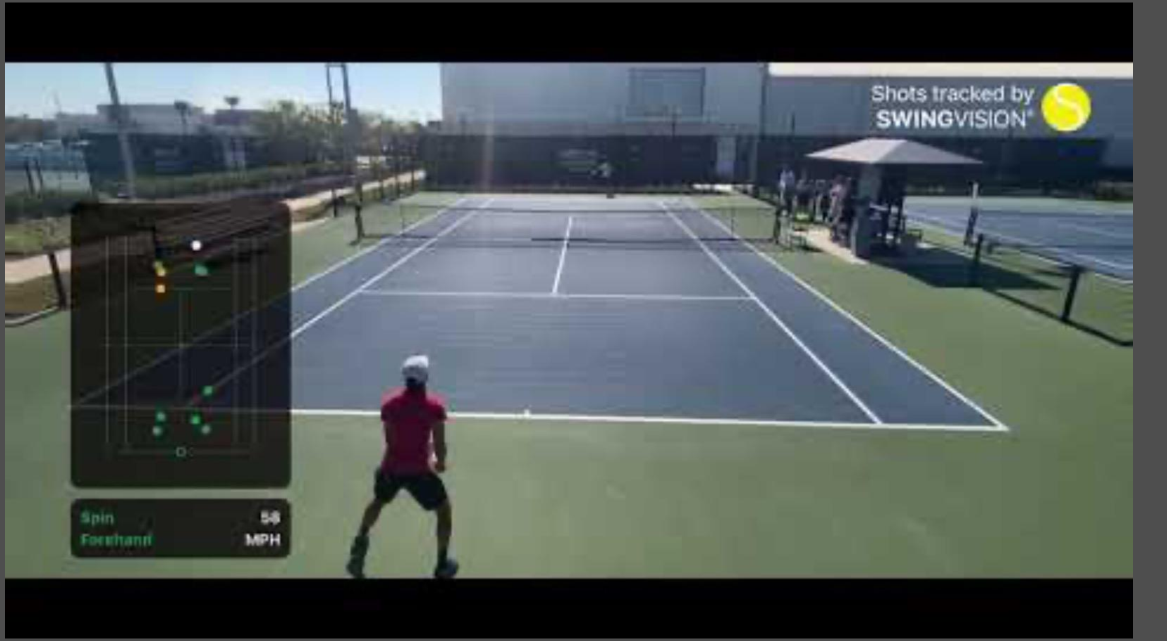

-15°
Explanation
Analysis
Flat footed landing
Looking too much to the ground
Leaning too far forward
72%
Flat footed landing
Ideal Position
Leaning forward
Overflexion

SwingVision

- Tenis.
- Herramienta con revisión técnica.

App Store Editors' Choice
SWING VISION
Series 7 Apple Watch Ad
LEVEL UP
YOUR GAME
Match
SHOT PLACEMENT
Combined Stats
Swupnil Sahai
Richard Hsu
Shannon Bolick
Referral Progress
Weekly Goals

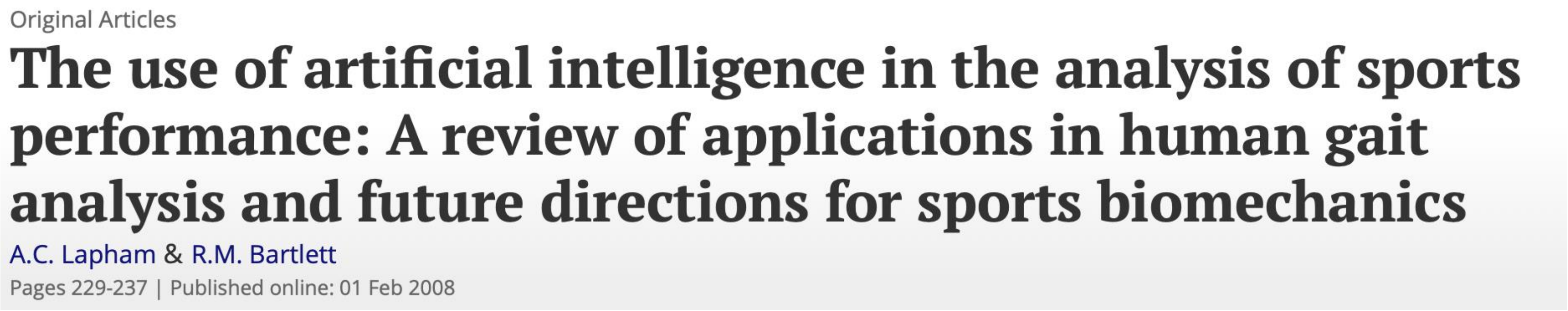
SwingVision
SWING
VISION


Shots tracked by
SWINGVISION
Spin
Forehand
58
MPH

- Análisis por video.

¿Cuál es el siguiente paso?

AI

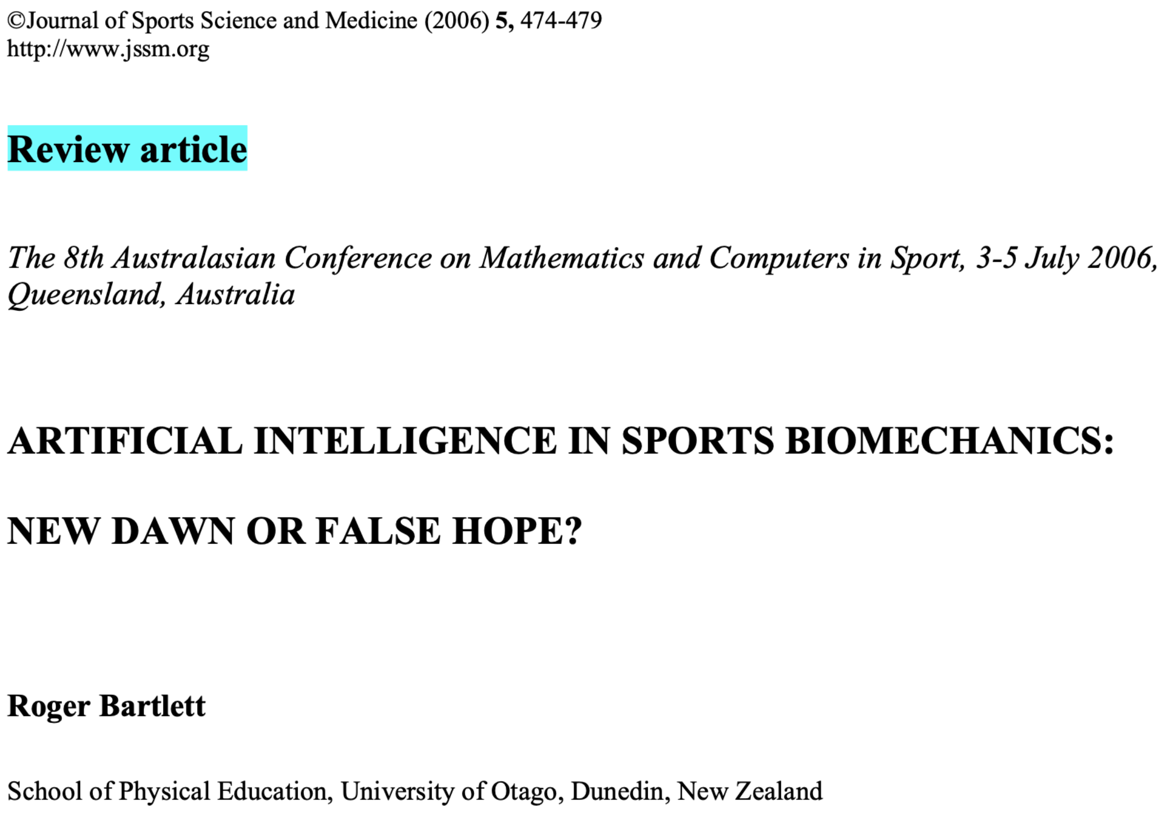


Original Articles

The use of artificial intelligence in the analysis of sports performance: A review of applications in human gait analysis and future directions for sports biomechanics

A.C. Lapham & R.M. Bartlett

Pages 229-237 | Published online: 01 Feb 2008



©Journal of Sports Science and Medicine (2006) **5,** 474-479
http://www.jssm.org

Review article

The 8th Australasian Conference on Mathematics and Computers in Sport, 3-5 July 2006, Queensland, Australia

ARTIFICIAL INTELLIGENCE IN SPORTS BIOMECHANICS:

NEW DAWN OR FALSE HOPE?

Roger Bartlett

School of Physical Education, University of Otago, Dunedin, New Zealand