

Introduction to the Sports Performance Laboratory & Exercise Physiology Laboratory

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Sports Performance Laboratory



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Principal Investigator

- **Dr. Ching-Feng Cheng**
- Professor and Chairman
- Department of Sport and Kinesiology, NTNU
 - 14 book chapters
 - Over 80 academic journal articles
 - Cited over 800 times
 - H-index: 15



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Principal Investigator

- **The Society of Chinese Scholars on Exercise Physiology and Fitness (SCSEPF)**
 - Board Member
- **Journal of Exercise Science and Fitness**
 - Editorial Board
- **Sports Physiology and Fitness Division, National Olympic and Asian Games Teams**
 - Coordinator and Sports Science Committee Member
- **Taiwan Society of Exercise Physiology and Fitness (TSEPF)**
 - Former President

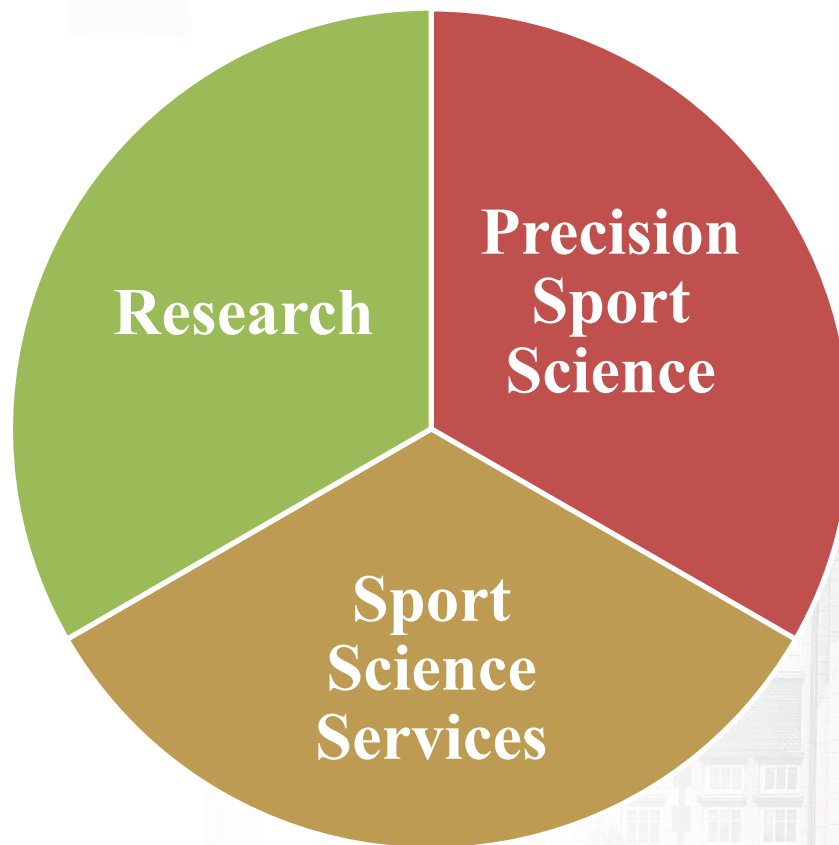


Lab's Members

- 3 PhD students, 1 PhD student from Deakin University, AU
- 8 master students
- 1 full-time research assistant



Lab's Mission



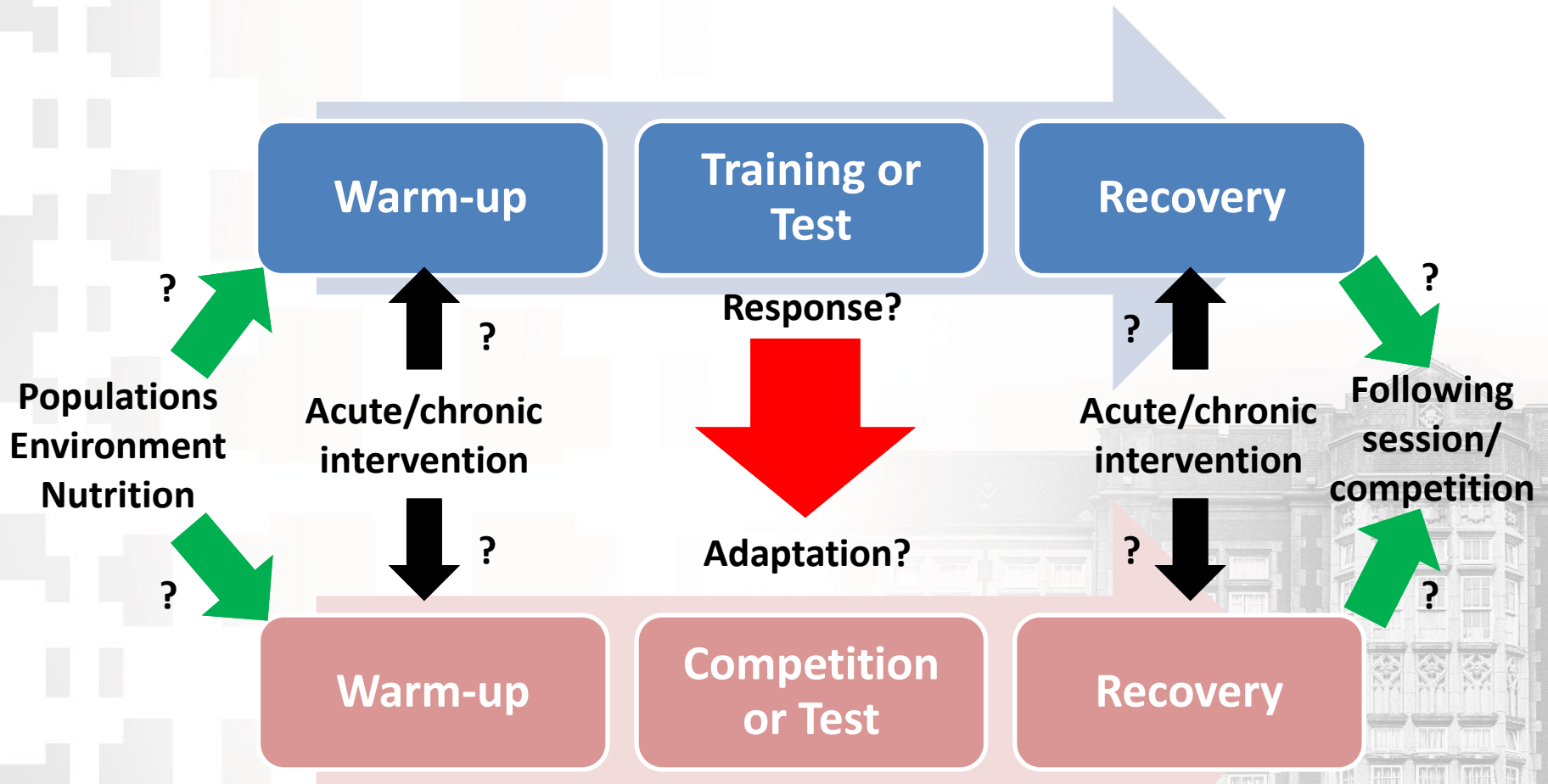
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Research Interest & Projects



- **Exercise Training Physiology**
- **Exercise & Sport Physiology**
- **Sport Nutrition**
- **Strength and Conditioning Training**

Research Interest & Projects



Research Interest & Projects

- **Ongoing project (2023-)**
 - Acute effects of **capsaicin** ingestion on aerobic capacity and high-intensity interval exercise in athletes



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Research Interest & Projects

- Previous projects (Grants from National Science and Technology Council)

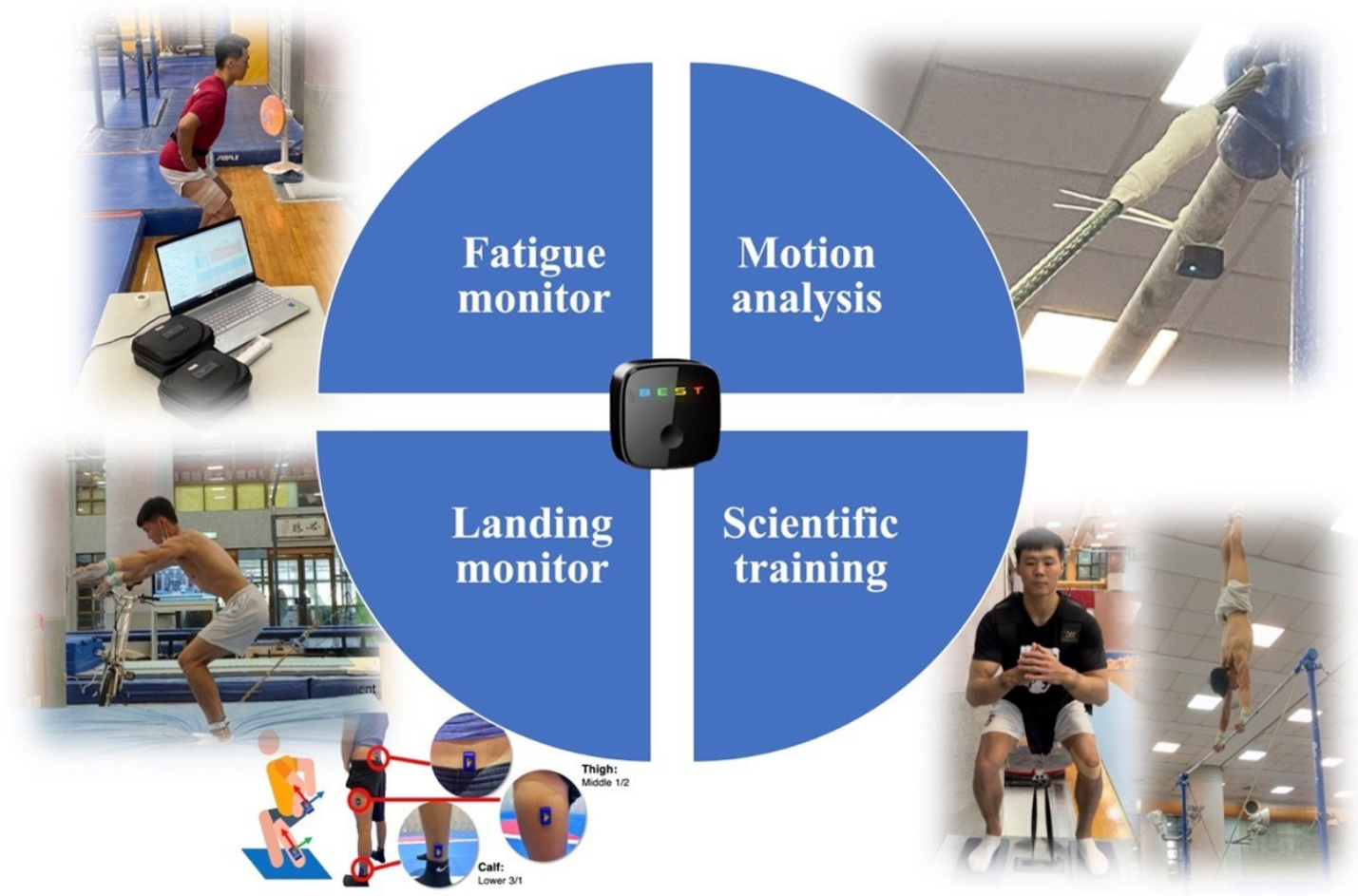
Years	Topics
2021-2023	Effects of blood flow restriction on bodyweight based high-intensity circuit training
2019-2021	Effect of ischemic preconditioning on exercise performance recovery and physiological restoration following intense exercise
2017-2019	Effects of local and remote ischemic preconditioning on aerobic capacity and high-intensity interval training benefits in athletes
2015-2017	Effects of inspiratory muscle dynamic recovery on high-intensity interval training benefits in athletes
2014-2015	Effects of inspiratory muscle warm-up and training on pulmonary and muscle oxygen kinetics in athletes
2013-2014	Effects of high-intensity interval training on aerobic capacity, muscle deoxygenation, and performance in rowers

Research Interest & Projects

- Theses & dissertations of lab graduates

Years	Topics
2024	The effect of milk supplementation after exercise-induced muscle damage on the performance of lower limbs
2023	The effects of ischemic preconditioning on 200-m swimming performance
2021	Effects of half-time re-warm-up with core strength exercises on subsequent power and agility performance
2020	Effects of contrast bath therapy with far-infrared sauna on physiological recovery and muscle fitness after resistance exercise
2019	Effects of heat condition on critical power , exercise tolerance and muscle oxygenation
2017	Effects of postactivation potentiation using isometric and isokinetic contractions on repeated sprint and agility performance in female soccer player

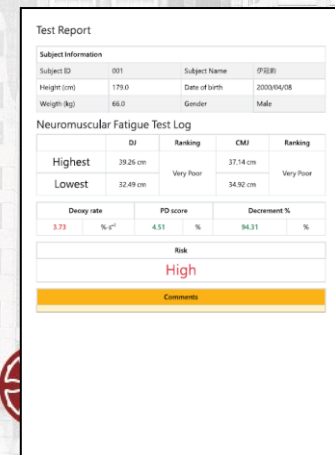
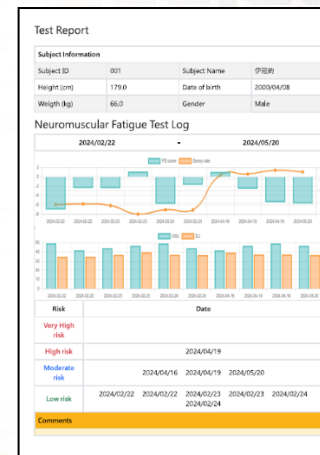
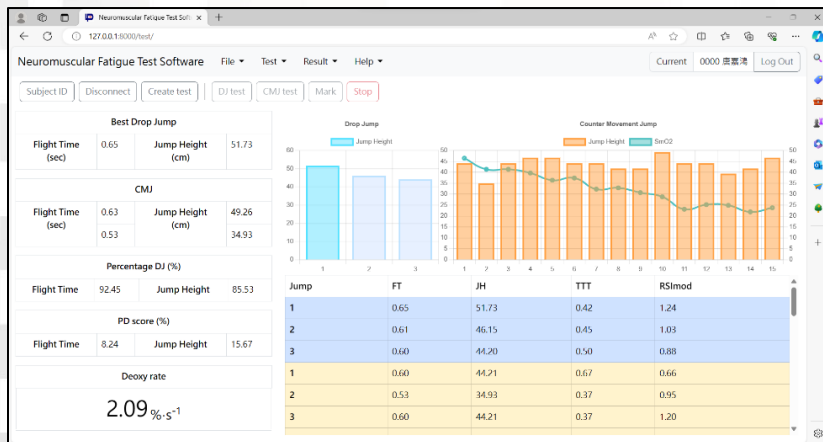
Precision Sport Science Project



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Precision Sport Science Project

- This project aims to develop a **scientific real-time feedback system for elite gymnastics training** to:
 - Incorporate **mobile app, IMU** and **NIRS**
 - Enhance training efficiency and quality
 - Prevent overtraining and reduce injury risk
 - Ultimately support medal-winning success in Olympics and Asian Games



Precision Sport Science Research

恭喜 唐嘉鴻 榮獲男子體操單槓
巴黎奧運銅牌



永不放棄
鑄就今日榮耀

國科會第2期精準運動科學研究專案計畫



台師大運動競技系主任
鄭景峰

希望把在教練認為

運科協助專屬訓練計畫
數據分析 強化身體素質



臺師大發展體能訓練和傷害防護學程 培養更多專業人才

PARIS 2024 國立臺灣師範大學運動與休閒學院 / 運動競技學系 / 體育與運動科學系 / 教育智庫辦公室

晚間新聞
PTS EVENING NEWS

阿基里斯腱斷裂 運科團隊助速返賽場



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<https://pr.ntnu.edu.tw/ntnunews/index.php?mode=data&id=22746>

Sport Science Services



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Environment and Equipment



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Environment and Equipment

- **METAMAX[®] 3B portable metabolic system**



Environment and Equipment

- **CHESTGRAPH HI-101 Portable Spirometer with Ultrasonic or Turbine Flow Sensor**
- **MicroRPM Respiratory Pressure Meter**
- **Powerbreathe inspiratory muscle strength training device**



Environment and Equipment

- PortaMon near infrared spectroscopy (NIRS)
- Moxy NIRS



Environment and Equipment

- CYCLUS 2 ergometer

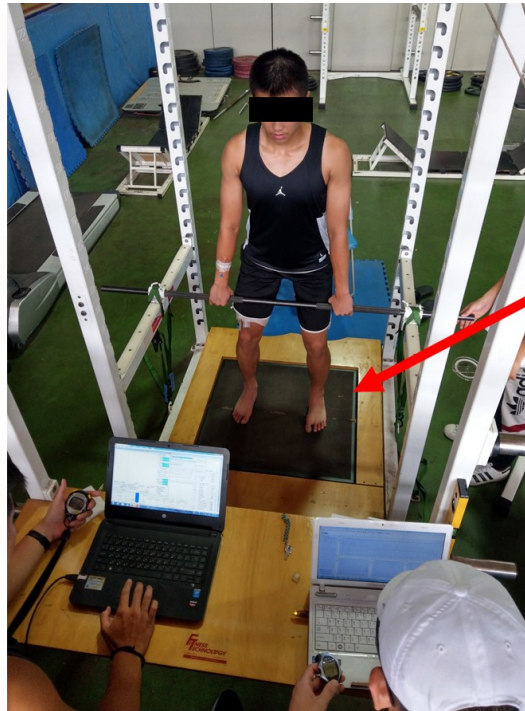


- MONARK 894e & LC6 ergometer



Environment and Equipment

- Ballistic Measurement System



Ballistic Measurement System (BMS)
Force plate



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Environment and Equipment

- PASCO force plate



- TENDO Unit linear displacement transducer



Environment and Equipment

- Xsens inertial measurement unit



- Smartspeed timing gates system



Environment and Equipment

- **KAATSU Master 2.0**



Environment and Equipment

- Polar H10 sensor
- Polar Pacer watch



Environment and Equipment

- **Vitros DT60 II Chemistry System**
- **Vitros DT LI Chemistry Analyzers**
- **OPTI CCA-TS2 Blood Gas and Electrolyte Analyzer**
- **Blood Lactate Meter Lactate Pro 2 LT-1730**



Exercise Physiology Laboratory



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Principal Investigator

- **Dr. Jen-Yu Ho**
- Associate Professor
- Department of Sport and Kinesiology, NTNU
 - 6 book chapters
 - Over 40 academic journal articles
- Ph.D. in Kinesiology, University of Connecticut, USA



Principal Investigator

- **Director, Department of Sports Science, National Sports Training Center, Taiwan (2020-2022)**
- **Taiwan Society of Exercise Physiology and Fitness (TSEPF)**
 - Supervisor
- **Journal of Strength and Conditioning Research**
 - Associate Editor



Research Interest

- **Resistance training and muscle performance**
- **Hormonal responses to resistance training**
- **Nutritional supplementation and performance**



Recent Research Projects

- Ongoing project
 - Effects of short-term resistance training using different **velocity loss** thresholds on **anti-oxidant capability** and muscular fitness in healthy men



Recent Research Projects

- **Previous projects**

- Exploring study on efficacy of **exercise combined with music** in smokers during early **smoking cessation**
- Acute effects of combining **accentuated eccentric loading** with intra-set rest intervals on **performance and hormonal responses** in hypertrophic training



The Lab



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Equipment

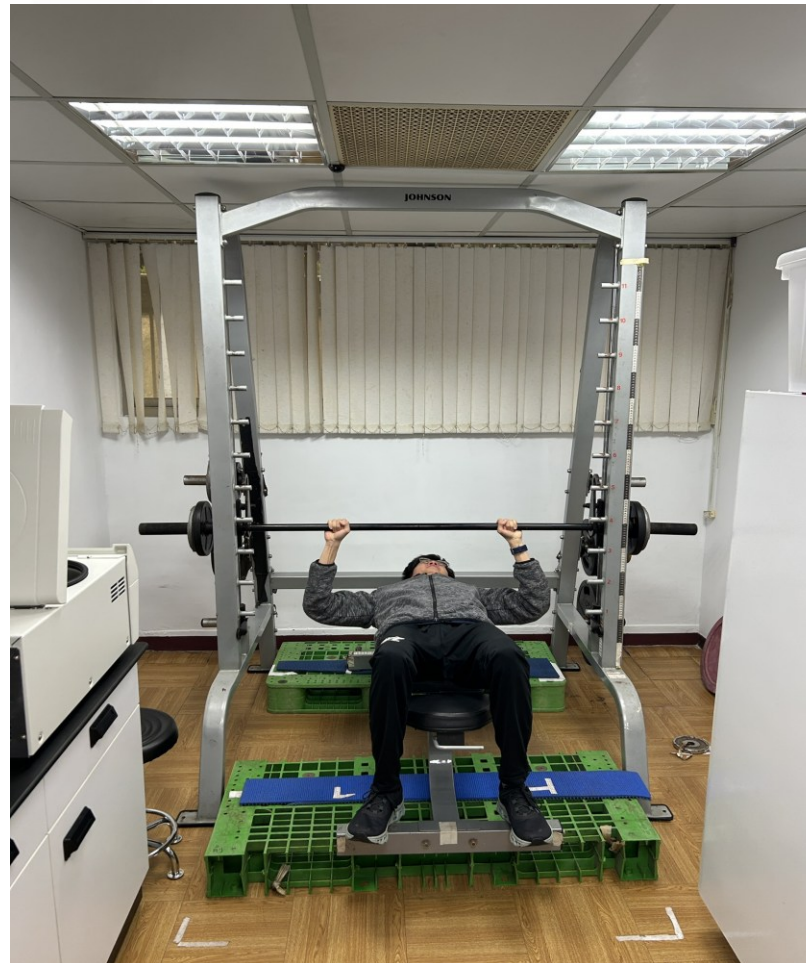
- Thermo Scientific Megafuge 8R Centrifuge



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Equipment

- Matrix Smith Machine



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Equipment

- **Body Composition Analyzer-- TANITA MC-980MA PLUS**



<https://www.tanita.com.tw>



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Equipment

- **Brower Timing System**



<https://www.browertiming.com/>



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Equipment

- **GYMAWARE linear displacement transducer**



<https://gymaware.com/camera-based-systems-gymaware/>



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Thank you for your attention!



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