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Body composition in netball players

IFSEMC 2022
Netball Symposium

Sarah Chantler RD(SA)



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@sarahchantler



Profile of netball



Energy balance

Eating behaviours

Adaptations to training

Changes in lean mass

Body composition measures

Energy expenditure

Energy intake

Part of overall research

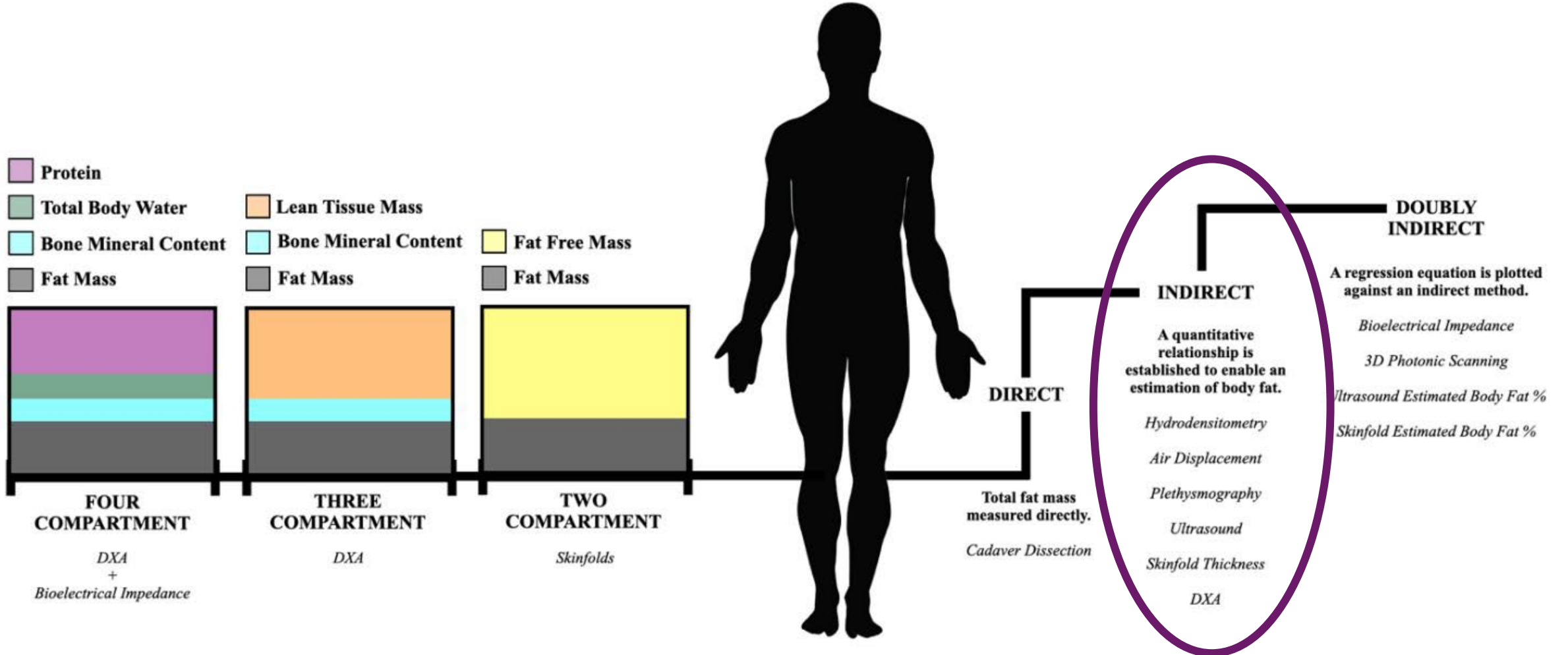
In alignment with applied services

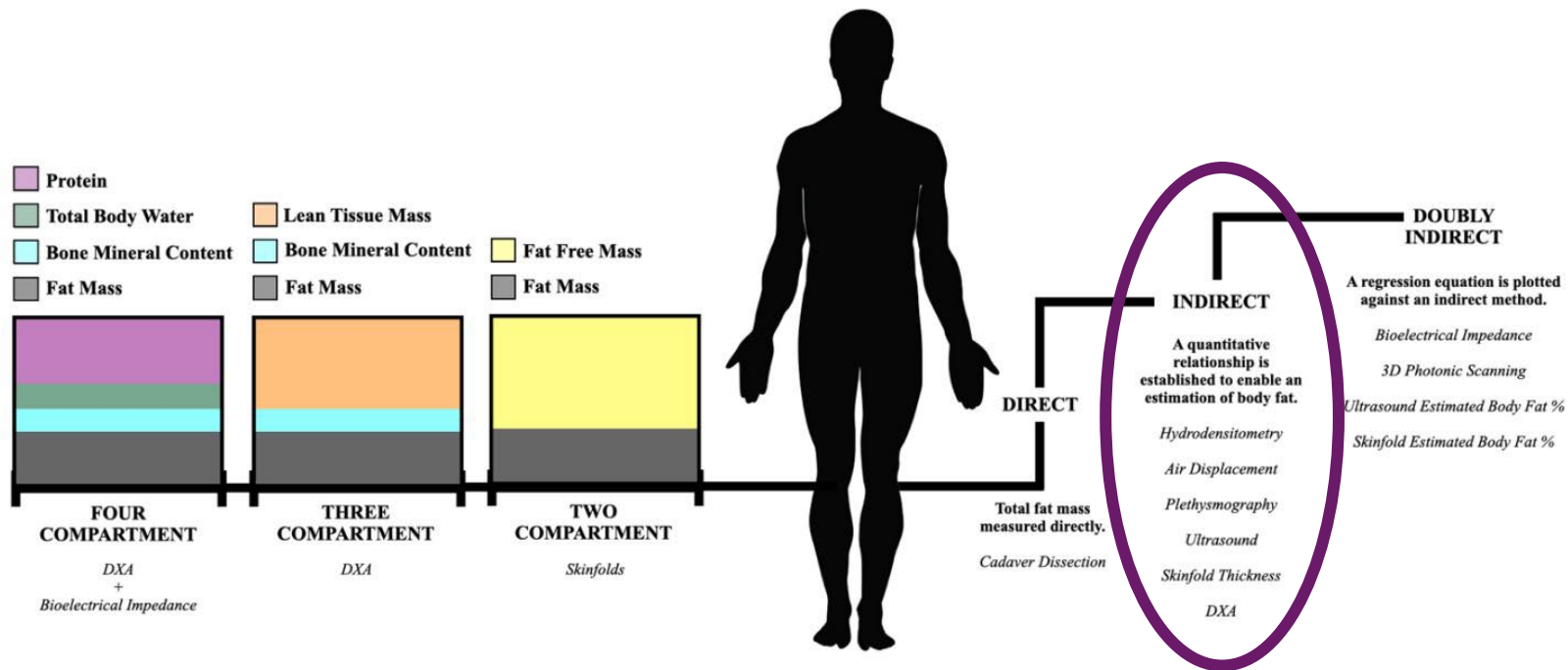
Lack of research linking body comp to performance in adult players and dietary intakes



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Lean mass
 ↓
 Jump height
 Injury risk
 Acceleration
 (power)
 Change of direction
 ↓
 Performance

A netball game in progress. A player in a blue jersey is jumping to catch a pink and white netball. The background shows a large arena with spectators and bright lights. A purple text box is overlaid on the left side of the image.

Academy pathway and Super League Netball players

- 38 players over the course of 2 years (18 senior, 20 junior)
- DXA scans at season-directed intervals [beginning of preseason, mid point of pre-season, end of preseason/beginning of season and end of season]



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Shawbrook
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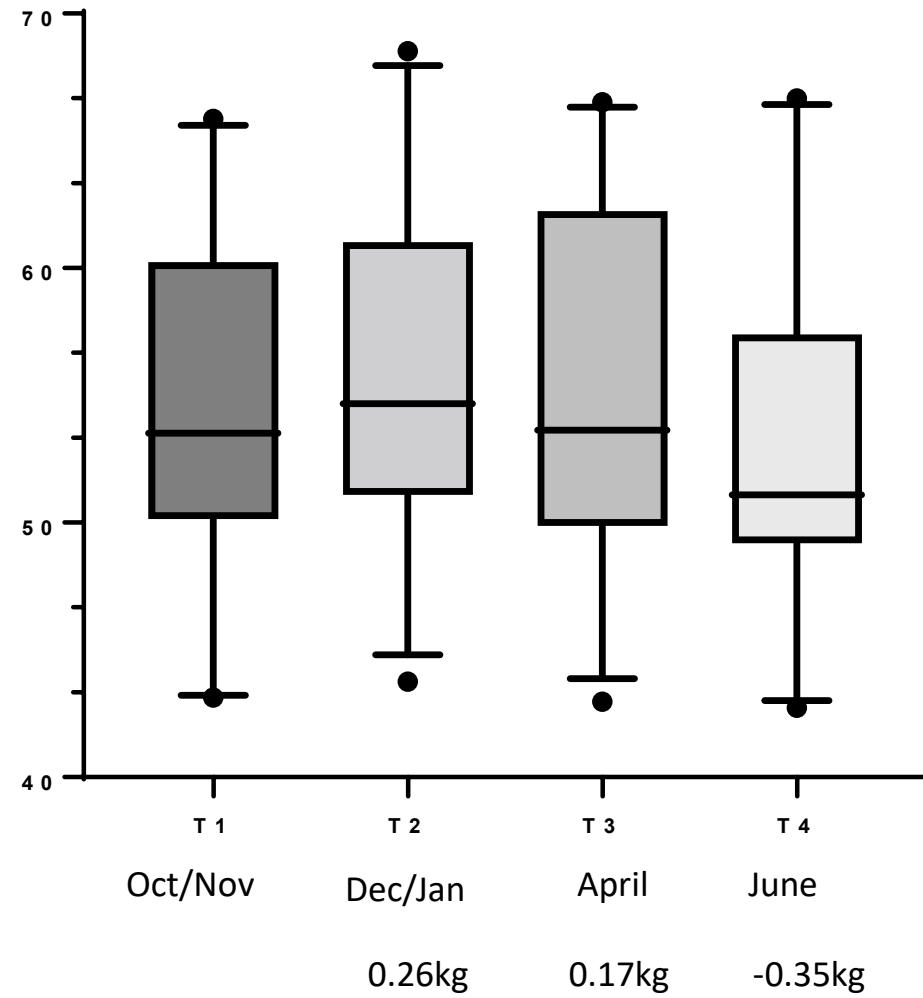
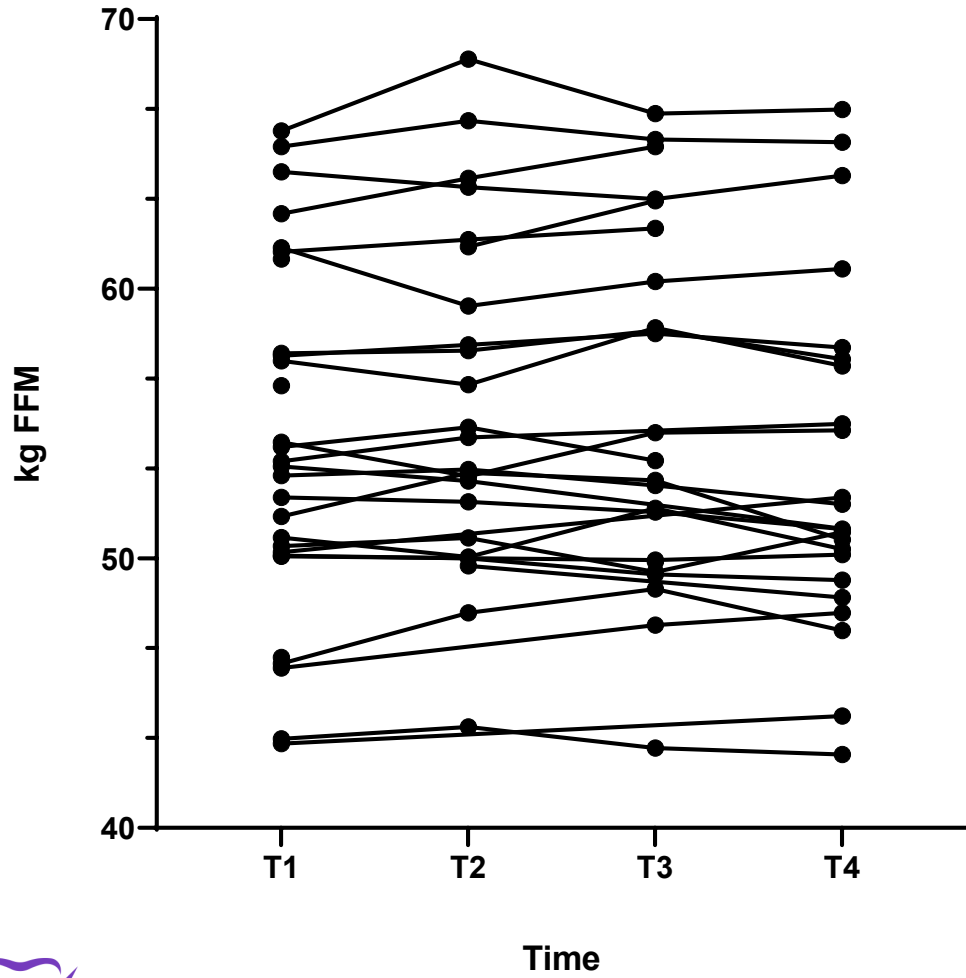
Shawbrook
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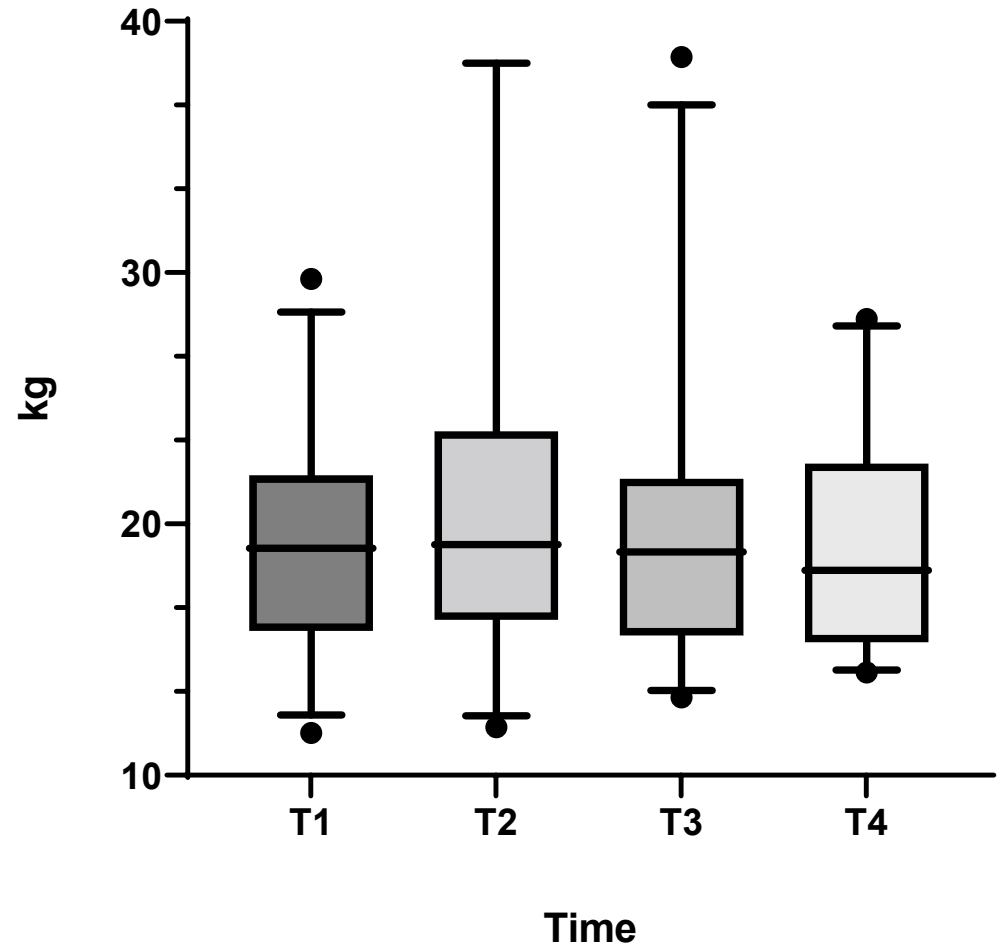
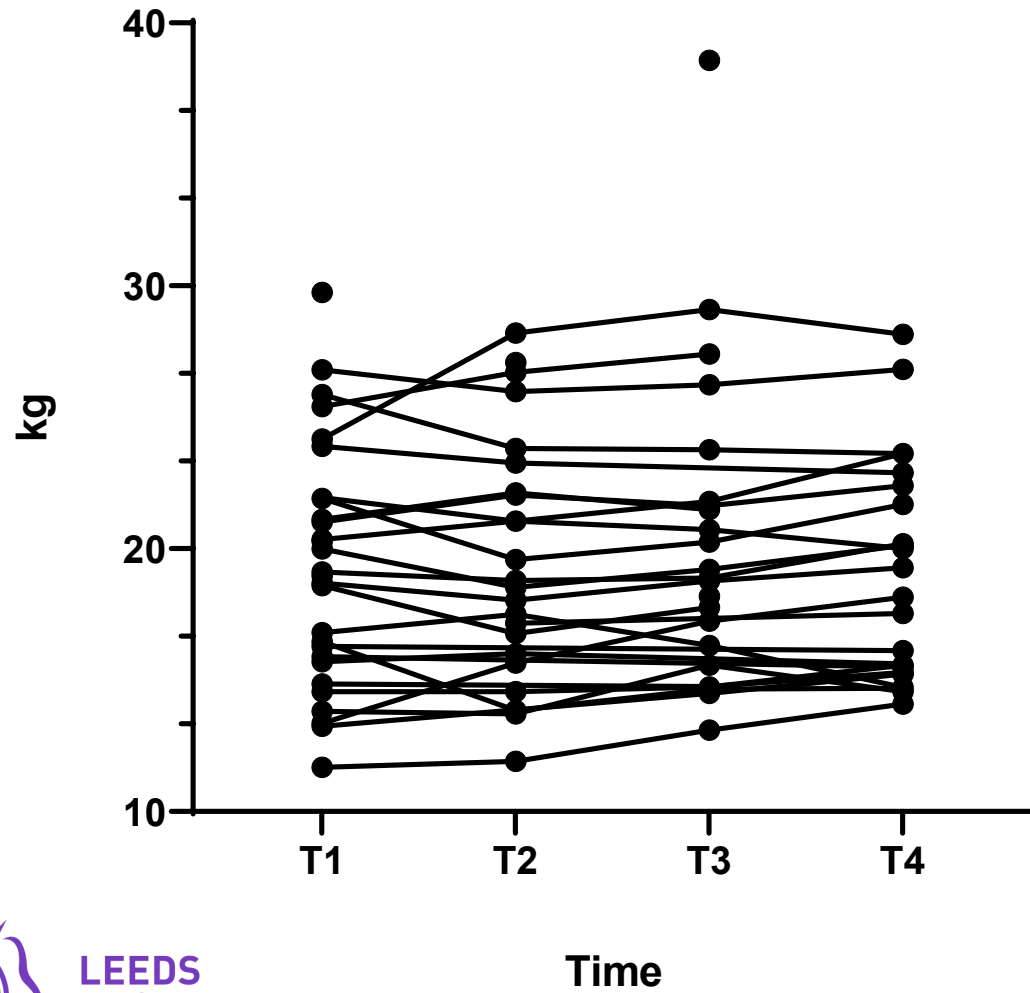
General overview of weekly training content

Period	Session Type	Frequency	Duration	RPE
Pre-season 1 (October - November)	Court	4	61.9 ± 41.1	4.3 ± 2.0
	Gym (Strength & hypertrophy)	3	59.7 ± 11.4	4.4 ± 1.0
Pre-season 2 (December - January)	Court	4	89.1 ± 39.6	4.4 ± 1.7
	Gym (Strength & power)	3	60.0 ± 10.9	4.3 ± 1.2
In-season (February - June)	Court	2 to 3	82.3 ± 37.6	4.0 ± 1.6
	Gym (Strength & power maintenance)	2	62.6 ± 26.0	4.2 ± 1.2

Changes in FFM

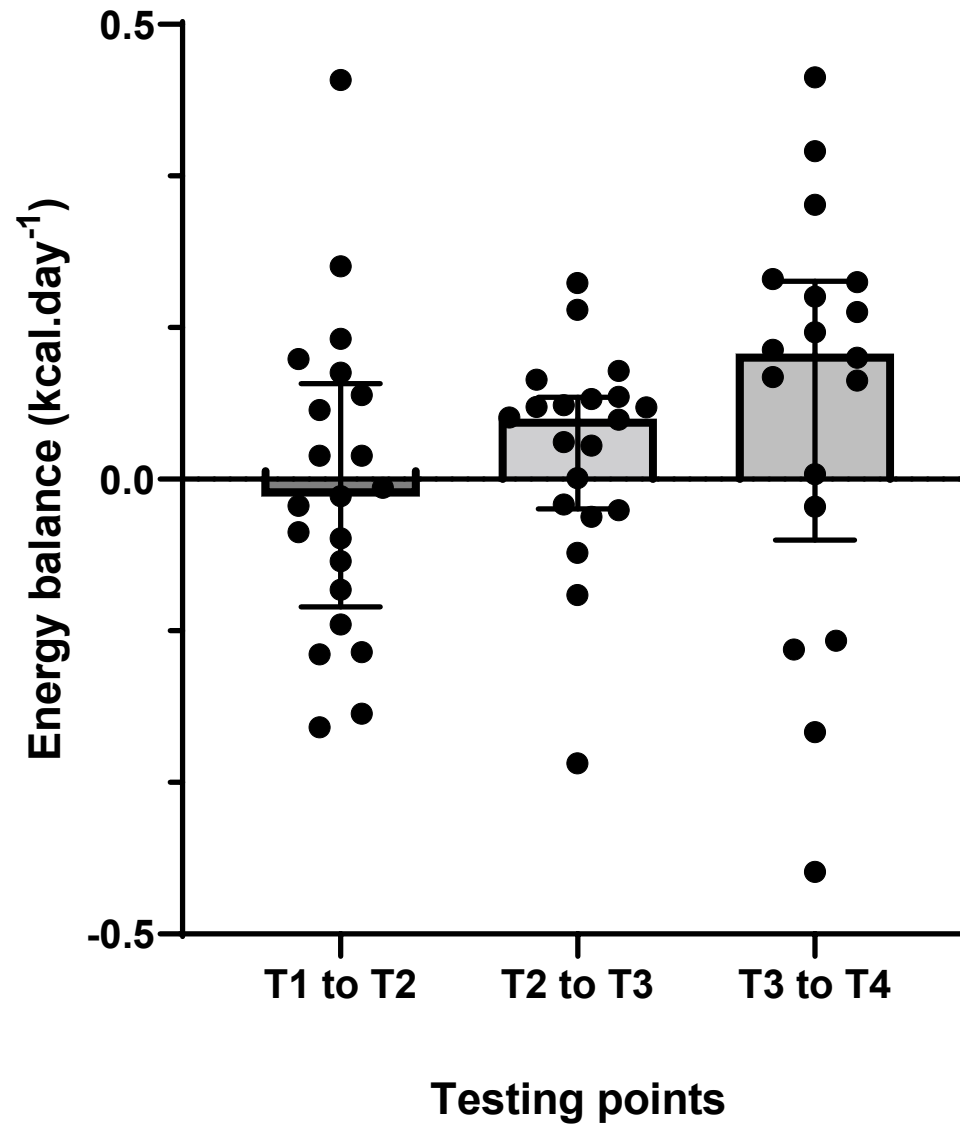


Changes in FM

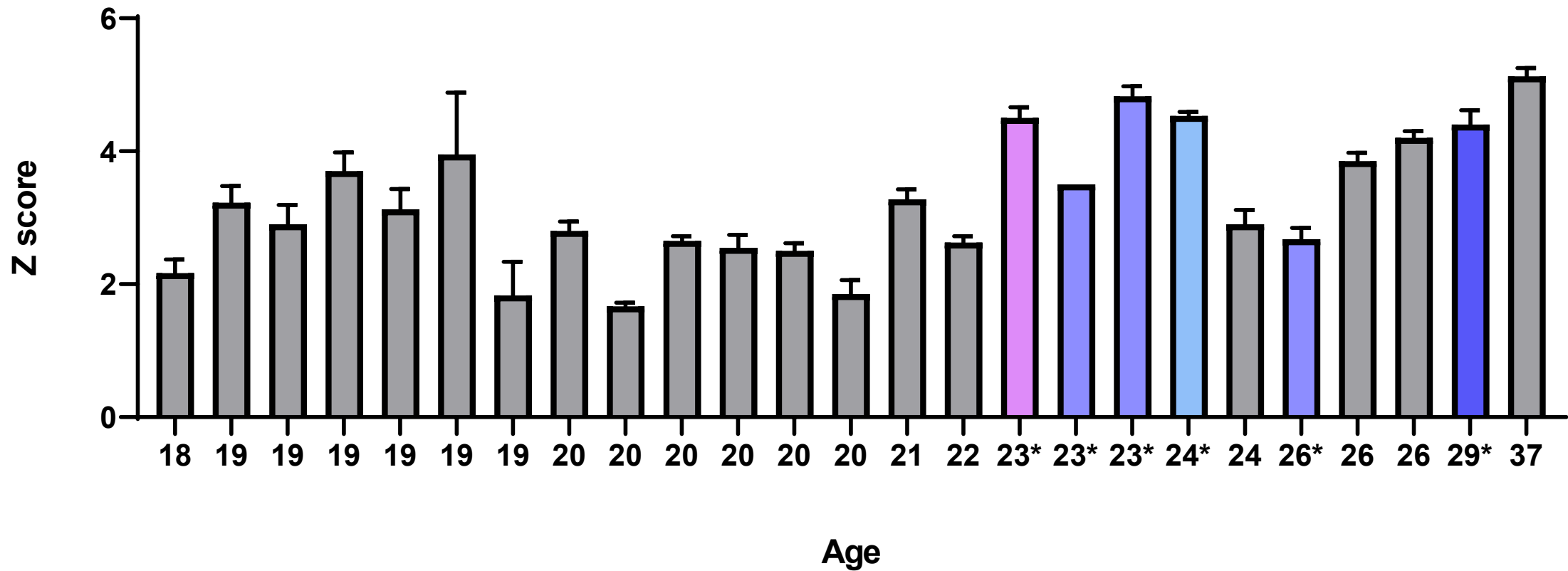


Energy balance

$$EB(\text{kcal} \cdot \text{day}^{-1}) = 1.0 \frac{\Delta FFSTM}{\Delta t} + 9.5 \frac{\Delta FM}{\Delta t}$$



Total BMD Z score



Summary

- Large range within positions
- Players have small changes over the course of preseason and season
- Energy balance reflects the changes in body composition and training pattern

Body composition limitations

- DXA is gold standard, but protocol is not always 'athlete-friendly'
- Incidence of disordered eating associated by DXA scan/body composition monitoring
- Lack of understanding around positional requirements (natural selection)

Energy balance

Eating behaviours

Adaptations to training

Changes in lean mass

Body composition measures

Energy expenditure

Energy intake

Doubly labelled water /
Actiheart and RMR
[Dr Nessian Costello]

N=13
Age: 26 ± 5 years
Height: 179.1 ± 5.4 cm
Mass: 80.5 ± 8 kg

Energy balance

Eating behaviours

Adaptations to training

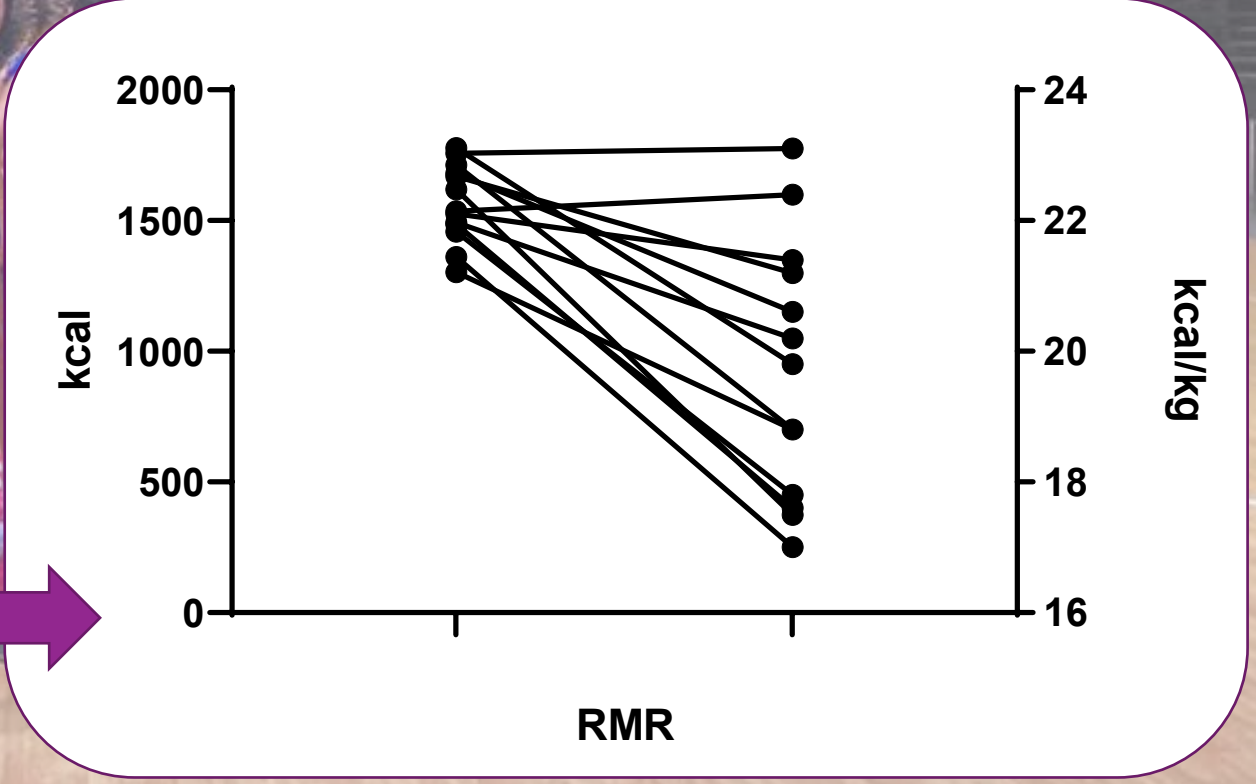
Changes in lean mass

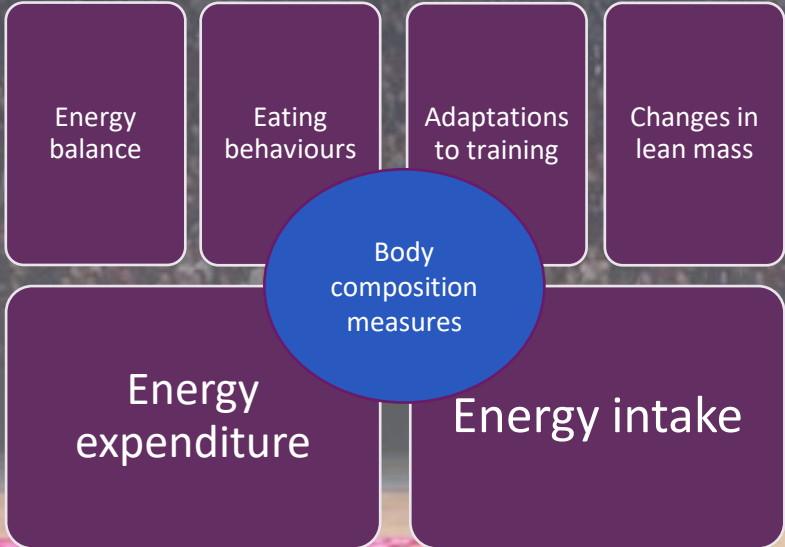
Body composition measures

Energy expenditure

Energy intake

Doubly labelled water / Actiheart and RMR [Dr Nessian Costello]





Doubly labelled water /
ACTiheart and RMR
[Dr Nessian Costello]

AVERAGE: 2100 kcal per day.

This was your average energy expenditure across the two week study period.

However, the amount of energy you expended changed **ALOT** depending on how physically active you were (e.g., **rest**, **training** or **match** days).

REST DAYS - 1825 kcal per day.

TRAINING DAYS - 2065 kcal per day.

MATCH DAYS - 2365 kcal per day.

AVERAGE: 3500 kcal per day.

This was your average energy expenditure across the two week study period.

However, the amount of energy you expended changed **ALOT** depending on how physically active you were (e.g., **rest**, **training** or **match** days).

REST DAYS - 3000 kcal per day.

TRAINING DAYS - 3400 kcal per day.

MATCH DAYS - 3800 kcal per day.

AVERAGE: 3000 kcal per day.

This was your average energy expenditure across the two week study period.

However, the amount of energy you expended changed **ALOT** depending on how physically active you were (e.g., **rest**, **training** or **match** days).

REST DAYS - 2475 kcal per day.

TRAINING DAYS - 2900 kcal per day.

MATCH DAYS - 3800 kcal per day.



@sarahchantler

Future research

- Key outcomes for dietary intake and eating behaviours of players
- Energy balance and incidence of RED-S across the season
- Netball specific Z-scores for bone mineral density and understanding of risk of fracture



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Thank you



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