The effect of bio-banding and pitch size on differential ratings of perceived exertion (dRPE)

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All content following this page was uploaded by Christopher Towlson on 01 May 2020.
The effect of bio-banding and pitch size on differential ratings of perceived exertion (dRPE).

Performance Multidisciplinary Team: Research to Practice
March 26th 2020

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The Problem
Increased rates of stature (8.6 cm/y at 10.7 to 15.2 y or −3.2 to +0.8 YPHV). Children will grow at a minimum of 8.6cm/y across PHV.

(Towlson et al, 2018).

Bio-banding categorises players based upon growth and maturation attributes rather than chronological age.

(Cumming, Lloyd, Oliver, Eisenmann & Malina, 2017).
‘Bio-banding’ is being introduced by national leagues, and well-received by players.

(Cumming et al. 2017)
Paucity of evidence for its efficacy.

Our research group is currently examining the efficacy of ‘bio-banding’ for talent identification in professional academies.

It is possible there may be an interaction between players maturity and game constraints.
RPE & dRPE

RPE is a good indicator of exercise intensity.
(Coutts et al. 2009)

RPE may lack sensitivity.
(McLaren, Graham, Spears & Weston, 2015)

dRPE allows for the discrimination of various facets.
(Weston, Siegler, Bahnert, McBrien & Lovell, 2014)
To investigate the effect of pitch size and maturity status on perceived exertion.
46 highly trained youth soccer players from two English Football League academies.
Maturity Status

The Khamis & Roche (1994) method (% Estimated Adult Stature Attained - % EASA).

Early (90-95.9% EASA)

Late (84-89.9% EASA)

4 Weeks 6 SSGs per player, per week
SSGs

Increasing Pitch Sizes:
- Small – 8.5 m x 8.5 m
- Medium – 17 m x 17 m
- Large – 24 m x 24 m
- Expansive – 34 m x 34 m

5 minute, 4 Vs. 4, SSGs in a bio-banded format.
Followed by games in a mixed format.
2 early, 2 late comprising each team.
Performance Metrics
Q2: Using the verbal expressions on the scale below, please rate your perception of LEG MUSCLE EXERTION for the session.

- Nothing At All
- Minimal
- Easy
- Very Easy
- Moderate
- Somewhat hard
- Hard
- 'Maximal'
- Extremely hard
- Absolute Max
Preliminary Findings

Findings are descriptive.

Statistical analyses are ongoing.
Preliminary Findings

Effect of small pitch size on dRPE for early developers

- N = 32
- Mean (SD) = 42 (15)
- RPE-B = 44 (14)
- RPE-L = 37 (15)
- RPE-T = 40 (17)

Effect of small pitch size on dRPE for late developers

- N = 43
- Mean (SD) = 47 (14)
- RPE-B = 39 (15)
- RPE-L = 39 (16)
- RPE-T = 51 (13)

Mean diff = 5 AU
Preliminary Findings

Effect of medium pitch size on dRPE for early developers

N = 33
Mean (SD) = 42 (11)

RPE-B = 45 (13)
RPE-L = 40 (11)
RPE-T = 41 (16)

Mean diff = 9 AU

Effect of medium pitch size on dRPE for late developers

N = 37
Mean (SD) = 51 (13)

RPE-B = 47 (13)
RPE-L = 44 (13)
RPE-T = 48 (13)
Preliminary Findings

Effect of large pitch size on dRPE for early developers

- **N = 45**
- **Mean (SD) = 38 (17)**
- **RPE-B = 41 (18)**
- **RPE-L = 34 (15)**
- **RPE-T = 37 (15)**

Effect of large pitch size on dRPE for late developers

- **N = 43**
- **Mean (SD) = 47 (14)**
- **RPE-B = 43 (16)**
- **RPE-L = 40 (17)**
- **RPE-T = 48 (15)**

Mean diff = 9 AU
Preliminary Findings

Effect of expansive pitch size on dRPE for early developers

N = 37
Mean (SD) = 42 (12)

Effect of expansive pitch size on dRPE for late developers

N = 32
Mean (SD) = 50 (9)

Further analysis is required across all facets of dRPE.

Mean diff = 8 AU
Mean scores for all facets of dRPE are higher in the late developing players, compared to early developing as pitch size increases.
References


