

# Enhancing dietary practices, general nutrition knowledge and body composition of a female International Rugby Union player: A case study incorporating smartphone application technology

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## Introduction:

The importance of athlete nutrition education is emphasised by studies reporting improved body composition following the intervention of a performance nutritionist (1, 2). However, in certain sports where the performance nutritionist is employed on a part-time or consultancy basis, the provision of such nutrition education primarily occurs at live-in training camps that occur less than ten times annually. The use of smartphone nutrition application (app) technology is becoming more prevalent (3) and may offer a cost-effective and novel method of maintaining better communication between athletes and practitioners at times of the season when such interactions may be limited (i.e. in the time between live-in training camps). In contrast to clinical populations (4, 5), there is limited research in to the use of nutrition app technology within athletic cohorts. With indices of general nutrition knowledge, body composition and dietary intake of primary interest, this case study reports the effects of implementing nutrition app usage (APP) versus habitual practices (CONT) with young, female International Rugby Union players.

## Background of Athletes:

Two 19 year old female Rugby Union players, who were playing in the highest tier of women's rugby in England (English Premiership), participated in this study and were allocated to one of two conditions.. Both players had represented their country at International U20's level.

## Methods:

Anthropometric data, a general nutrition knowledge questionnaire (GKNQ) and a 3-day food diary were collected before and after an 8-week in-season period that separated consecutive training camps. Normal communication methods between camps (CONT) were complimented by the use of app technology enabling photo and text commentary interactions between the athlete and performance nutritionist (APP).

## Conclusions:

- Albeit in a single individual, the nutrition app intervention has shown positive results in relation to enhanced dietary practices, increased nutrition knowledge and improved body composition
- In scenarios where athlete-practitioner communication may be limited, the use of a nutrition app may be of benefit to the performance nutritionist to increase nutrition knowledge and body composition in team sport players.

## Results:

For APP, daily energy intake (EI) increased by 9% (2029 kcal.d<sup>-1</sup>, 2213 kcal.d<sup>-1</sup>), GKNQ scores improved by 8% (61%, 69%) and improved body composition (8-site skinfold sum: 133 mm, 112 mm) were observed following the upload, and subsequent practitioner feedback on, 161 meal photographs over the 8-week period (~3 meals.day<sup>-1</sup>).

Such findings did not occur in CONT (EI = 3% increase; 2251 kcal.d<sup>-1</sup>, 2325 kcal.d<sup>-1</sup>, GKNQ = 6% increase; 49%, 54%, 8 site skinfold sum: 93.1 mm to 93.4 mm)

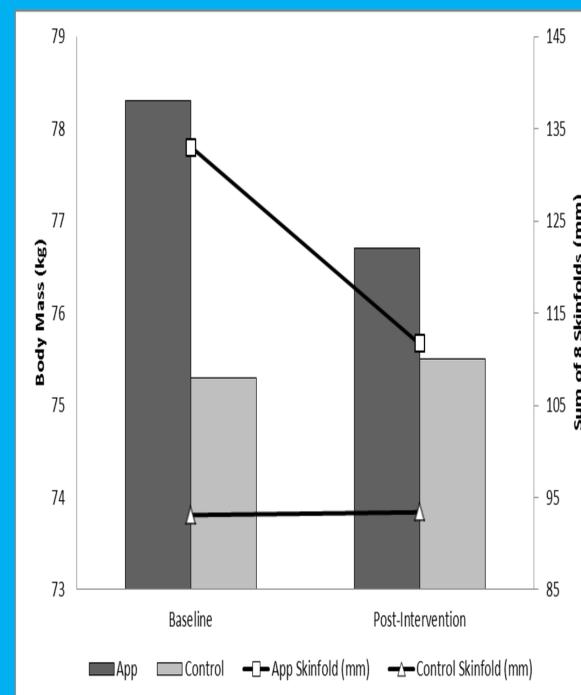


Figure 1: Changes in body composition (body mass (kg) and skinfold sum (mm)) of APP and Control from baseline to post-intervention

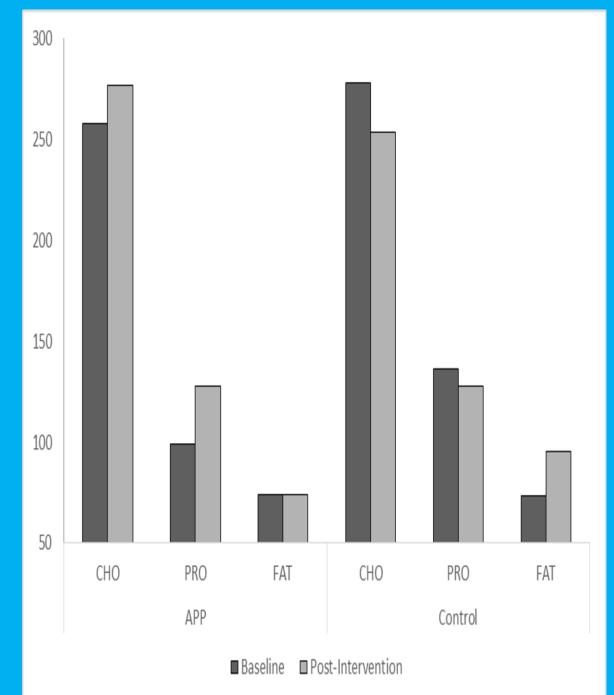


Figure 2: Average macronutrient intake (g) of APP and Control at baseline and post-intervention

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