

## Load Comparison between Different Positions during Elite Male Basketball Games: A Sport Metabolomics Approach

**Authors :** Kayvan Khoramipour, Abbas Ali Gaeini, Elham Shirzad, Øyvind Sandbakk

**Abstract :** Basketball has different positions with individual movement profiles, which may influence metabolic demands. Accordingly, the present study aimed to compare the movement and metabolic load between different positions during elite male basketball games. Five main players of 14 teams (n = 70), who participated in the 2017-18 Iranian national basketball leagues, were selected as participants. The players were defined as backcourt (Posts 1-3) and frontcourt (Posts 4-5). Video based time motion analysis (VBTMA) was performed based on players' individual running and shuffling speed using Dartfish software. Movements were classified into high and low intensity running with and without having the ball, as well as high and low-intensity shuffling and static movements. Mean frequency, duration, and distance were calculated for each class, except for static movements where only frequency was calculated. Saliva samples were collected from each player before and after 40-minute basketball games and analyzed using metabolomics. Principal component analysis (PCA) and Partial least square discriminant analysis (PLSDA) (for metabolomics data) and independent T-tests (for VBTMA) were used as statistical tests. Movement frequency, duration, and distance were higher in backcourt players (all p < 0.05), while static movement frequency did not differ. Saliva samples showed that the levels of Taurine, Succinic acid, Citric acid, Pyruvate, Glycerol, Acetoacetic acid, Acetone, and Hypoxanthine were all higher in backcourt players, whereas Lactate, Alanine, 3-Methyl Histidine, and Methionine were higher in frontcourt players. Based on metabolomics, we demonstrate that backcourt and frontcourt players have different metabolic profiles during games, where backcourt players move clearly more during games and therefore rely more on aerobic energy, whereas frontcourt players rely more on anaerobic energy systems in line with less dynamic but more static movement patterns.

**Keywords :** basketball, metabolomics, saliva, sport loadomics

**Conference Title :** ICSSR 2020 : International Conference on Sport Science and Research

**Conference Location :** Toronto, Canada

**Conference Dates :** June 18-19, 2020