

British Judo Association



Nutrition

Important Note: This handout is not meant as a stand-alone document. It is a supplement to the 'Nutrition' workshops/courses where the underlying concepts are fully explained and the relevance to a judo training programme is discussed.

Nutrition for the Young Judoka

Energy Demands

Physical activity requires additional calories beyond the amounts needed for growth and basal energy of children and adolescences (Petrie, Stover & Horswill, 2004). Weight-class sports involve repeated bouts of high intensity exercise, lasting from a few seconds to a few minutes and are therefore primarily anaerobic in nature. Most of the energy required is taken from adenosine triphosphate/creatine phosphate systems and glycolysis reactions within muscles, maximum effort in minimal amounts of time causes high caloric expenditure in short time periods (Petrie et al., 2004).

Carbohydrate

Carbohydrate fuels the muscle glycogen required for high intensity training/competition. Children lack the full development of glycolytic capacity so fat also plays a crucial role for the young athlete, this difference in muscle glycolytic enzymes disappears in adolescences (Eriksson, Gollnick & Saltin, 1973). Young athletes should consume at least 50% of total daily energy intake as carbohydrate (Petrie et al., 2004).

A major concern in weight-class sports is caloric restriction to reduce body weight, and its effect on growth and development, increasing risk of injury and eating disorders (Sundgot-Borgen, 1994). It is important that the young judoka to increase their caloric intake to match expenditure to maintain body mass and encourage the development of lean mass (Petrie et al., 2004). Adolescent judoka could increase their carbohydrate intake to 65-70% when reducing fat consumption to reduce weight (Burke & Maughan, 2004); as high-carbohydrate diets for young athletes controlling body weight are associated with enhanced performance (Horswill, Hickner, Scott, Costill & Gould, 1990).

Protein

Protein provides essential amino acids to support growth, particularly for lean body mass development. The body increases the usage of protein stores when glycogen stores are low, as inadequate energy causes protein to be used as a substrate for energy rather than for synthesising lean tissues (Petrie et al., 2004).

Protein is essential for the muscle development required to excel in weight-class sports (Petrie et al., 2004). Also, research has found that protein supplementation improved aerobic and anaerobic training performance in young judoka (Laskowski & Antosiewicz, 2003). The young judoka should consume no less than the general recommendation of 12-15% protein for adult athletes (Burke & Maughan, 2004).

Fat

Dietary fat provides energy for growth and development, aiding the absorption of essential fat-soluble vitamins; restricting fat consumption in healthy weight children could impair this (Butte, 2000). For children, 25-30% of daily calories intake should come from fats (Barness, 1993), unsaturated fats should make up most of this amount, with saturated fats accounting for no more than 10%. ("Recommended Dietary Allowances, 10th Edition, 1989", 1989).

Athletes often reduce fat intake for weight control purposes and decreasing fat consumption may be advisory for the adolescent judoka, as long their body fat levels do not drop below minimum recommendations for health and fitness (7% for males and 14% for females) (Oppliger, Case, Horswill, Landry & Shelter, 1996). Dairy products and red meats should not be eliminated from the diet as they provide essential minerals and vitamins for optimum growth (Petrie et al., 2004).

Nutrients

Young athletes in weight-class sports are often deficient in calcium and iron, (Kirchner, Lewis & O'Connor, 1995); causing amenorrhea, reduced bone mineral density and growth rate, and decreased performance (Thompson, 1998). It is important for young judoka to consume the correct amounts of nutrients required for optimal growth (Petrie et al., 2004).

Hydration

Dehydration causes a greater strain on the cardiovascular system and impairs athletic performance. During physical activities children can experience greater heat stress, than adults; as they have a greater ratio of surface area to body mass, they absorb environmental heat quicker, have a faster metabolic rate, therefore greater heat production and their sweating capacity tends to be lower ("Climatic Heat Stress and the Exercising Child and Adolescent", 2000). Dehydration of just 2% of body weight in adults can decrease endurance and work capacity, reducing to just 1% of body weight for children (Wilk, Yuxiu & Bar-Or, 2002).

In weight-class sports dehydration is common strategy used to 'make weight' which greatly increases the heat stress on the athlete, additionally in-vitro research suggests that dehydration of cells leads to protein and glycogen breakdown (Berneis, Ninnis, Häussinger & Keller, 1999). It is important for young judoka to avoid dehydrating to decrease body weight, and to match their sweat losses during training/competition with fluid intakes of around 1.5 times this amount (Petrie et al., 2004).

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