SCIENCE FRIDAY: International Society of Sports Nutrition Position Stand (ISSN): protein and exercise

PART I OF TWO PART SERIES ON NUTRITION IN SPORT. The International Society of Sports Nutrition (ISSN) issued a position paper outlining its stand on protein and exercise in June 2017. It states the ISSN "provides an objective and critical review related to the intake of protein for healthy, exercising individuals. Based on the current available literature, the position of the Society is as follows:" (see the full article for details).

The article is dense with information, and for those interested in this topic makes for fascinating reading.

The Earned Runs interpretation below, attempts to give you the 'meat' of the scientific message:

- Separately, EATING PROTEIN and EXERCISING (especially resistance training) each will lead to the building of muscle (MPS or Muscle Protein Synthesis).
- Muscle building, or MPS, can be boosted most effectively in persons performing resistance exercise when the eating of high quality protein occurs shortly before or after exercise.
- Protein intake in resistance-exercising persons should roughly equal a 'dose' of 20-40 grams of protein in each of 3-4 meals, spaced evenly throughout the day
- A pre-sleep meal of 30-40 grams of protein will help with overnight muscle building
    - The greater the resistance-training effort, the higher the number of grams per meal and the number of meals
    - Restricting calories for weight loss requires that resistance-exercising persons ingest/eat a higher level rather than a lower level of protein dose each meal to maintain body lean muscle
- Whole foods are the preferred source of protein to obtain the best mix of nutrients, including the amino acid leucine*; supplements may be needed and are acceptable sources of quality protein, especially if there is a need to control caloric intake.

- Endurance athletes are reminded that their diets should contain sufficient carbohydrates for optimal sport performance.
- Earned Runs sample calculation:

  70 kg (~165 pounds) x 1.4-2.0 -3.0g day = 98-140-210g total protein
  60kg (~132 pounds) = 84-120-180g total protein/ day

By this scientific advice it seems that the most effective strategy for building muscle during hard training, in which muscle is purposely damaged and repaired is to 1) increase protein intake according to demand (by bodyweight and intensity of training), 2) deliver it to the tissues at regular intervals during the day, 3) spike the process at night by adding a pre-sleep meal.

To ensure that the variety and type of essential building blocks needed to make and repair muscle are present in protein sources ingested at each dose/meal the 4) sources should be whole foods when possible. 5) Supplements may be required to obtain the required high quality protein doses and keep calorie intake reasonable.

Practical Considerations

The nutrition prescription of the ISSN translates into a large amount of protein to ingest daily. A fair amount of effort is required to get dosage and quality just right AND to have it available in portable or convenient form. From personal experience and in talking to a few others trying to boost intake of high quality protein each day, anecdotally some patterns seem to emerge in the implementation of this advice.

Certain go-to items tend to be repeated daily in a high-quality-pro menu: Greek yogurt, cottage cheese, eggs, lower-fat cheeses, cooked chicken breast, and canned fish. Burger patties separated from fast food sandwiches help with on-the–hoof lunches. Advance planning and DIY work can allow the regular inclusion of beans and other plant protein sources although the quality may not be as high found in animal sources.

As far as supplements go, a daily high protein drink containing easily digestible whey and/or casein based proteins might find its way into the mix. Protein bars can work if the calories won't bust a weight-maintenance budget. Nut butters are frequently hailed as great protein sources, but the ratio of protein-to-calories is rather low and the accompanying fat make them higher calorie treats rather than dietary staples.

Although the total day's intake may represent a variety of sources, weekday-after-weekday it becomes easiest to repeat the go-to foods. The weekends provide opportunities for expanding food selections.

Consider making some dietary changes to increase protein intake if you are performing strength work most days of the week in addition to aerobic sessions. If a training plan is designed to prepare you for a race or event for which you are not currently capable of handling, you may benefit from having the necessary nutrients to repair and maintain the muscles you are exercising.

Another reason to adopt a high protein diet might to change body composition, the topic of next week's SCIENCE FRIDAY post, Part II in this Series on NUTRITION IN SPORT.

RUN HAPPY!

https://jissn.biomedcentral.com/articles/10.1186/s12970-017-0177-8

*Foods high in leucine:
https://www.healthaliciousness.com/articles/high-leucine-foods.php