



Determination of Run Calorie Needs

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New Years resolutions have been set and many are embarking on their first marathon training program as a result! In order to maximize performance, it is essential to fuel yourself properly during training runs and racing, especially when runs are prolonged (>90 minutes). As a nutritionist, I have found that many runners tend to overestimate actually run energy expenditure, causing them to overeat during the day and gain unwanted weight during season. Furthermore, an overzealous calorie intake during training can trigger a multitude of stomach issues (e.g., nausea, diarrhea, vomiting, side stitches, sloshing) and ultimately diminish run performance. Below is a step-by-step guide to help you determine your total calorie burn during training runs as well as your target calorie replacement needs after about 90 minutes of running. Happy running trails!

- Step One:** Determine running calorie expenditure per mile (A)
 $0.63 \times \text{body weight (pounds)}$
- Step Two:** Determine goal race pace or how many miles/hour will you cover? (B)
Example: An 8-minute miler will cover 7.5 miles/hour
- Step Three:** Calculate hourly expenditure based on goal race pace (C)
Example: An 8-minute miler would multiply 7.5 by the figure from step one.
- Step Four:** Determine hourly calorie replacement needs (D)
 $*0.3 \times C$

*Research shows runners can physically absorb about 30% of what they expend.

Sample Case Study

John is a 200 pound marathoner preparing for the Rock and Roll Arizona Marathon with a goal of breaking the coveted 3 hour mark. He has had issues with premature muscle fatigue and cramping during previous marathons which has lead him to seek nutritional advice with regards to race day fueling. We used the guidelines specified above to help calculate and devise the perfect nutrition plan for his needs.

- Step One:** We determined John's calorie burn each mile.
 $0.63 \times 200 \text{ lbs} = 126 \text{ calories/mile}$
- Step Two:** We discussed John's goal marathon pace.
John's goal marathon pace to break 3 hours is 6:50 per mile which means he will be running 8.78 miles per hour.
- Step Three:** We determined John's hourly expenditure based on his goal marathon pace.
 $8.78 \text{ miles per hour} \times 126 \text{ calories per mile} = 1,106 \text{ calories burned per hour}$
- Step Four:** We calculated his goal calorie replacement after 60-90 minutes of racing.
 $0.3 \times 1,106 \text{ calories} = 331 \text{ calories/hour}$
- Step Five:** We discussed how John was going to replace these calories.
The first 90 minutes of the marathon, John plans on using the course provided water at aid stations to maintain good hydration status. After 90 minutes, John's goal is to consume ~330 calories per hour until he finishes which means a total of ~ 500 calories are needed. In order to simplify his nutrition, John customized his sports drink through a company called InfinIT Nutrition (www.infinitnutrition.com). Each serving of his sports drink contains 160 calories, 40 grams of carbohydrate, 375 mg sodium, 110 mg potassium, 30 mg magnesium, and 15 mg of calcium. John plans on carrying 3 heaping servings of his InfinIT in 1 large gel flask filled out with water. He will take shots of the concentrate every 10 minutes along with course provided water so that 2 servings are complete from 1:30-2:30 and the final serving complete from 2:30 to the finish line.

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