**1. Biological value** (**BV**) is a measure of the proportion of absorbed [protein](https://en.wikipedia.org/wiki/Protein) from a food which becomes incorporated into the proteins of the organism's body. It captures how readily the digested protein can be used in[protein synthesis](https://en.wikipedia.org/wiki/Protein_biosynthesis) in the [cells](https://en.wikipedia.org/wiki/Cell_%28biology%29) of the organism. Proteins are the major source of [nitrogen](https://en.wikipedia.org/wiki/Nitrogen) in food. BV assumes protein is the only source of nitrogen and measures the proportion of this nitrogen absorbed by the body which is then excreted. The remainder must have been incorporated into the proteins of the organisms body. A [ratio](https://en.wikipedia.org/wiki/Ratio) of nitrogen incorporated into the body over nitrogen absorbed gives a measure of protein "usability" – the BV.

Unlike some measures of protein usability, biological value does not take into account how readily the protein can be [digested](https://en.wikipedia.org/wiki/Digestion) and absorbed (largely by the [small intestine](https://en.wikipedia.org/wiki/Small_intestine)). This is reflected in the experimental methods used to determine BV.

BV uses two similar scales:

1. The true percentage utilization (usually shown with a percent symbol).
2. The percentage utilization relative to a readily utilizable protein source, often [egg](https://en.wikipedia.org/wiki/Egg_%28food%29) (usually shown as unitless).

These two values will be similar but not identical.

The BV of a food varies greatly, and depends on a wide variety of factors. In particular the BV value of a food varies depending on its preparation and the recent diet of the organism. This makes reliable determination of BV difficult and of limited use — fasting prior to testing is universally required in order to ascertain reliable figures.

BV is commonly used in nutrition science in many [mammalian organisms](https://en.wikipedia.org/wiki/Mammals), and is a relevant measure in humans.[[1]](https://en.wikipedia.org/wiki/Biological_value#cite_note-Methodology-1) It is a popular guideline in [bodybuilding](https://en.wikipedia.org/wiki/Bodybuilding) in protein choice.

2. It is a long-accepted paradigm that protein quality is an important aspect of any consideration of human protein needs, as evidenced by extensive efforts to measure quality and standardize those measurements. For this reason, in the present context of optimal protein intakes, discussion of “what sort” is equally relevant as the question of “how much.”

There are 2 important aspects of protein quality: *1*) the characteristics of the protein and the food matrix in which it is consumed, and *2*) the demands of the individual consuming the food, as influenced by age, health status, physiologic status, and energy balance. Multiple factors influence protein quality, and these issues have been debated extensively for decades. In light of increasingly diverse functions of protein in human health, the appropriate endpoints by which the “how much” question is investigated become equally important for the assessment of protein quality. With respect to dietary protein's ability to satisfy metabolic demands in relation to maintaining muscle and bone, significant data have emerged to suggest that protein's role in health may be based on factors that are not captured by current protein quality estimates.

The current aim of protein quality evaluation is to determine the ability of a protein to meet maintenance needs plus special needs for growth, pregnancy, or lactation: “The lowest level of dietary protein intake that will balance the losses of nitrogen from the body, and thus maintain the body protein mass, in persons at energy balance with modest levels of physical activity, plus, in children or pregnant/lactating women, the needs associated with the deposition of tissues or the secretion of milk at rates consistent with good health.”(4)