











CREATINE:

More Than Just a Muscle-Building Supplement

Most people associate the word creatine with athletic performance, weight rooms, and building muscle. Creatine monohydrate has long been one of the most researched and widely used sports supplements, particularly because of its ability to support high-intensity exercise and strength training. But newer findings indicate it is a multifunctional supplement.

Creatine is a naturally occurring compound found primarily in skeletal muscle, with smaller amounts stored in the brain and other tissues. It plays an important role in the body's energy system by helping regenerate adenosine triphosphate (ATP), the immediate energy source used by cells. And because the brain has exceptionally high energy demands, researchers are increasingly interested in what creatine may do beyond physical performance.

While the brain represents a small percentage of your body weight, like the heart it consumes a substantial amount of body energy. Maintaining this energy supply is essential for concentration, memory, learning, and normal neurological function.

Creatine contributes to the brain's energy-buffering system, just as it does in muscle. This has led researchers to investigate whether increasing creatine availability through supplementation might support cognitive performance like it does for muscle metabolism. A growing body of research suggests that creatine supplementation may have



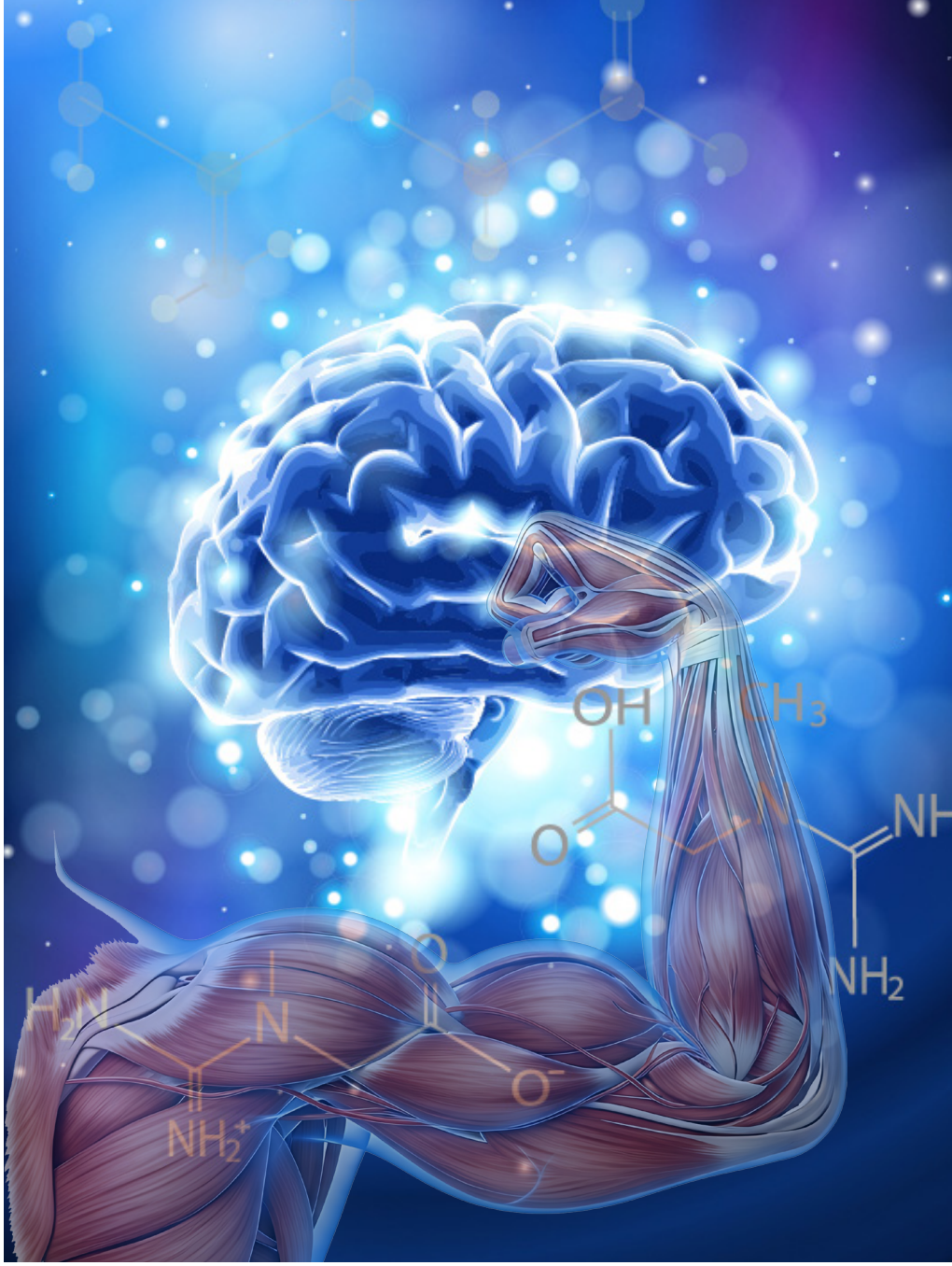
benefits for certain aspects of cognition, particularly memory. Some studies have also investigated attention and processing speed, although results are not uniformly positive and more research is needed to determine who benefits most. And similar to muscle, it seems the potential cognitive effects may be more pronounced in situations where the brain's energy demands are increased, or dietary creatine intake is relatively low.

Most people maintain 2 grams of creatine a day as the liver, kidneys, and pancreas make about 1 gram per day using amino acids - and most meat eaters get an additional gram from the likes of beef, dark meat chicken, and pork. Cold water fish are also good sources. Plant foods do not contain natural creatine, meaning vegetarians and vegans often have lower muscle creatine stores and may look to supplementation for sufficiency.

Creatine stores can vary considerably between individuals. Factors such as muscle mass, diet, physical activity, age, and sex can all influence creatine levels. Researchers are interested in whether women and individuals following plant-based diets may experience different responses to supplementation. Claims that women maintain low creatine stores obviously cannot be universally applied - because differences in total creatine stores are influenced substantially by differences in muscle mass and other physiological factors. But findings indicate women are more likely to have lower values than men. So, rather than thinking of creatine as a supplement specifically "for men" or "for women," it

is more useful to view it as a nutrient that may have different potential applications depending on an individual's diet, training status, age, and health goals.

More recently, researchers have begun examining how creatine supplementation may affect women across different stages of life. This is particularly relevant during perimenopause and menopause. As women age and estrogen levels change, several factors can affect physical performance and health, including reductions in muscle mass and strength, changes in body composition, and increased risk of bone loss. Some women also report changes in energy, sleep, mood, and cognitive function. Creatine may be useful as part of a broader strategy for maintaining muscle and physical function during this transition.



Research suggests that combining creatine supplementation with resistance training improves gains in strength and lean mass in women. Maintaining or increasing muscle mass is important for functional independence and healthy aging.

There is also growing interest in whether creatine could support cognitive health during periods of hormonal change. While early findings are encouraging, research specifically examining creatine for menopausal brain fog and cognitive symptoms remains limited.

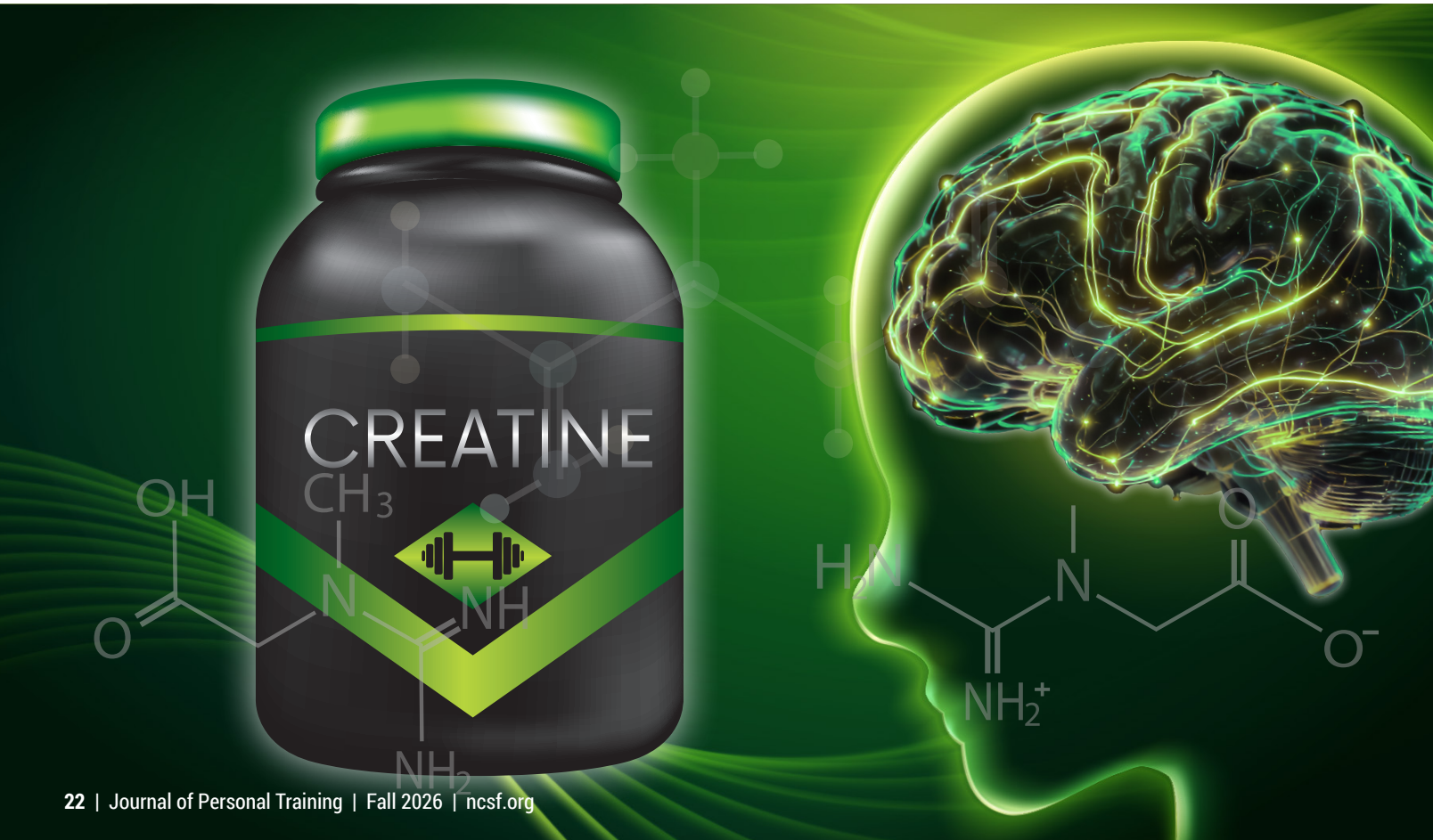
With that said, one of the most promising applications of creatine may be in healthy aging. Starting in midlife and accelerating with advancing age, adults can gradually lose muscle mass and strength. This process can contribute to reduced physical function, falls, and loss of independence.

Resistance training remains one of the most effective strategies for maintaining muscle and strength. Creatine can complement resistance exercise by increasing the availability of phosphocreatine in muscle; helping support rapid ATP regeneration during high-intensity activity. Research suggests that combining creatine with resistance training can improve strength and lean mass compared with training alone in older individuals. This makes creatine particularly interesting for adults who desire to maintain muscle as they age - not simply for those trying to become stronger athletes.

And while creatine has been studied extensively in adults, research in children and adolescents is considerably more limited. Some studies suggest that creatine may be well tolerated in certain adolescent athletic populations, but that's not to suggest children need creatine supplementation.

For young athletes, the foundation should remain adequate food and fluid intake, sufficient calories and protein, appropriate training, recovery, and sleep. While many parents are interested in this supplement's potential benefits - it is recommended to consult a pediatrician or qualified sports medicine professional before introducing supplements to children or adolescents.

Recent literature suggests there are also differing quantities for creatine monohydrate uses. A common maintenance dose is approximately 3-5 grams per day. Many athletes use a loading phase of larger daily doses for several days - but for routine dietary supplementation it isn't necessary to eventually



saturate muscle creatine stores. So, for muscle mass saturation the most important factor is consistency.

Creatine doesn't work like caffeine, where you take it immediately before a workout and feel an acute effect. Its benefits come primarily from gradually increasing and maintaining creatine stores in the body's tissues. For that reason, taking creatine every day is generally more important than taking it at a particular time of day.

When dosing for brain function, the values in the literature are higher with daily intakes suggested at 10-20 grams. The actual quantity is not as pinpointed as with muscle saturation strategies - but in these doses the research suggests efficacy and safety with limited reported side effects.

The form of creatine also likely matters - as creatine monohydrate is the most extensively studied form and is generally less expensive than many newer formulations. Since basic creatine monohydrate is used in supporting studies, users do not need the expensive "advanced" creatine formula to get the benefits demonstrated in research. Look for the GMP and USP seals on the product to ensure manufacturers are assessed for quality.

The important take away is that for most healthy adults, 3-5 grams of creatine monohydrate daily is a simple, evidence-based approach to lifelong improvements. And as is the case with all dietary supplements, people with medical conditions, those who are pregnant or breastfeeding, individuals taking medications, and parents considering supplementation for children should discuss creatine use with an appropriate healthcare professional. ■



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