Importance of nutrition in physiotherapy.

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Introduction

Nutrition and physiotherapy are two interconnected components in medicine. Which nutrient to consume depends upon what type of injury/deformity is being treated. For example, an injury which is concerned with bones demands a diet rich in calcium and vitamin D along with the required exercises, as prescribed by the physiotherapist. Proper nutrition will speed up the recovery process and will make sure that the recovery happens without any other side anomalies. Not only will it aid the recovery process, but it will also prevent other diseases from occurring. In the article, we shall dive in depth regarding the same and shall discuss various nutrients along with their importance [1].

Information

Physiotherapy refers to the treatment of an injury, disease or deformity by forms of exercises, massages and various other physical methods. It can help with neurological, cardiopulmonary as well as orthopedic issues. The process of treatment requires more than just this. Here is where nutrition comes into play. Nutrition can directly affect the rate of recovery as well as function while undergoing physiotherapeutic treatment.

A balanced diet helps one acquire all the necessary nutrients for healing and recovering. Following are some of the nutrients, along with their function, that are to be consumed to quicken the recovery process [1,2].

Nutritional calcium and vitamin D status, as well as bone disease in the elderly

Osteoporosis, a systemic skeletal disease defined by decreased bone mass, is a serious public health concern in EC member countries due to the high prevalence of fragility fractures, particularly hip and vertebral fractures. Endogenous (genetic, hormonal) and exogenous (nutritional, physical activity) variables influence skeletal bone mass. Nutrition plays an important role in bone health.Calcium and vitamin D are two critical elements for bone health.

Calcium insufficiency is linked to decreased bone mass and osteoporosis, whereas chronic and severe vitamin D deficiency leads to osteomalacia, a metabolic bone disease characterised by impaired mineralization of bone. The elderly are the most likely to suffer from vitamin D insufficiency, the preclinical stage of vitamin D deficiency. The main causes of vitamin D shortage and insufficiency include reduced renal hydroxylation of vitamin D, inadequate diet, insufficient sunshine exposure, and a reduction in vitamin D production in the skin. Calcium supplementation has been shown to have a substantial beneficial effect on bone mass and fracture incidence in recent research.Several investigations on the effects of vitamin D supplementation on bone loss in the elderly have shown that daily dosages of 400-800 IU of vitamin D, given alone or in conjunction with calcium, can correct vitamin D deficiency, prevent bone loss, and increase bone density in the elderly [3]. The recommended daily dietary allowances (RDA) for calcium at all stages of life were established in 1998 by the European Community's expert committee in the Report on Osteoporosis-Action on Prevention. For the elderly population, above age 65 the RDA is 700-800 mg/day.

Dairy products (milk, yoghurts, and cheese), fish (bone-in sardines), and a few vegetables and fruits are the major sources of calcium in the diet.The best method to get enough calcium is to eat a well-balanced diet. Calcium supplementation, on the other hand, may be utilised when food sources are limited or tolerated poorly. Calcium is typically well tolerated, and there have been few instances of serious adverse effects. Vitamin D deficiency may be prevented and treated with adequate sunshine exposure. However, concerns about skin cancer and skin illness limit sunlight exposure or UV irradiation [4].

Creatine

Creatine is a chemical present in meat, poultry, and fish that is naturally occurring. It aids in the production of energy in the body during heavy lifting and high-intensity exercise. It is also produced by the human body on a daily basis at a rate of around 1 gramme. Creatine has grown in popularity as a supplement

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***Received:** 28-Mar-2022, Manuscript No. AAAGIM-22-58697; **Editor assigned:** 30-Mar-2022, PreQC No. AAAGIM-22-58697 (PQ); **Reviewed:** 13-Apr-2022, QC No. AAAGIM-22-58697; **Revised:** 16-Apr-2022, Manuscript No. AAAGIM-22-58697 (R); **Published:** 23-Apr-2022, DOI: 10.4066/2591-7951.100117*

***Citation:** Tarapure R, Deshmukh N, Chaudhary S, et al. Importance of nutrition in physiotherapy. Arch Gen Intern Med 2022;6(4):117*

for gaining muscle mass and improving athletic performance. It also has the potential to aid in the recovery of an injury. Creatine supplements improved muscular growth and strength more than a placebo over a two-week immobilisation period, according to one research.

Another research discovered that those who took creatine supplements lost less upper-body muscle following a week of immobility than those who took a placebo. These findings were not seen in all research. However. The creatine supplement was given in four dosages of five grammes per day in both experiments that yielded favourable outcomes. It's worth noting that there's no consensus on creatine and sports injury healing right now. However, no studies have identified any harmful consequences to yet. Creatine is one of the most researched and safe supplements available, so it's worth a go [4].

Omega-3 Fatty Acids

Inflammation is always present in the early phase of wound healing after an injury. This inflammatory reaction is healthy and necessary for recovery. However, if the inflammation continues high for an extended period of time, it may stifle your healing [5].

1. Anti-inflammatory effects have been linked to these lipids, which may be found in foods such as fish, algae, walnuts, flaxseeds, and chia seeds.
2. Limiting omega-6 fats, which are typically found in maize, canola, cottonseed, soy, and sunflower oils, can also help to prevent excessive or chronic inflammation.
3. Consuming too many omega-6 fats has been shown to increase inflammation, especially when combined with a low intake of omega-3 fats.
4. Furthermore, some studies suggest that omega-3 supplementation may aid in the production of muscle protein, decrease muscle loss during immobility, and enhance recovery from concussions [5].
5. However, excessive intakes of omega-3 fats from supplements may impair your body's capacity to rebuild muscle growth once you resume training. As a result, it may be preferable to boost your omega-3 intake through diet rather than supplementation.

Glucosamine

1. Glucosamine is a lesser-known vitamin that can aid people with joint discomfort. This one is frequently advised for knee joints since it aids in bone reconstruction and cartilage preservation. Glucosamine may also assist with joint inflammation. Because glucosamine levels tend to drop with age, this is a helpful supplement to know for older individuals with osteoarthritis.
2. After starting to use supplements like these, it may take many months to observe benefits in joint problems [5,6].

Calcium

Calcium is important for bone health. It also aids in the regulation of muscle function and the appropriate functioning of the heart. Calcium may be found in milk, tofu, broccoli, and other foods. These are just a handful of the essential nutrients that help in physiotherapy-assisted healing and rehabilitation.

The type of nutrient required is determined on the type of damage or deformity being treated. If a person fractures their wrist, for example, wrist extensor stretch exercises should be performed together with the consumption of calcium, vitamin D, and protein-rich meals to expedite healing.

Chondroitin

Chondroitin is commonly used in conjunction with glucosamine to aid with joint discomfort and cartilage regeneration. These two minerals are frequently combined in supplements. Chondroitin is occasionally prescribed to people who have osteoarthritis since it has been demonstrated to help reduce the disease's development.

Proteins

1. Proteins are the structural components of the human body. They aid in the healing of damaged muscles and tissues. Poultry products are an excellent source of protein. Soy beans, lentils, milk, and other dairy products are also good sources.
2. Following a sports injury, the damaged body portion is frequently immobilised. This usually results in a loss of strength and muscular mass. Getting adequate protein, on the other hand, can assist to reduce this loss. Furthermore, a high-protein diet may help prevent inflammation from becoming too severe and slowing your recuperation.
3. In addition, gradually increasing your protein intake after you resume training the damaged body part aids in the rebuilding of any lost muscle.
4. For all of these reasons, incorporate protein-rich foods in your daily diet such as meat, fish, poultry, tofu, beans, peas, nuts, and seeds.
5. Studies suggest that evenly distributing protein across four meals stimulates muscle development more than an uneven distribution.
6. Experts also believe that having a protein-rich snack before bed might help your body develop muscle while you sleep [5,6].

Foods with a High Zinc Content

Many enzymes and proteins, including those required for wound healing, tissue repair, and growth, include zinc. In fact, research suggest that a lack of zinc in the diet might cause wound healing to be delayed. As a result, eating zinc-rich foods including meat, fish, shellfish, legumes, seeds, nuts, and whole grains may help you heal from an injury faster..Some people may be tempted to simply take zinc supplements to ensure they meet their recommendations.Some people may be tempted to just use zinc pills to fulfil their dietary requirements.

However, because zinc competes with copper for absorption, excessive zinc supplement dosages may raise the risk of copper insufficiency.

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Overall, if your zinc level is adequate, extra zinc from supplements is unlikely to hasten wound healing.However, acquiring adequate nutrients from your diet is critical [6].

Vitamin A

It aids in cell reproduction, which is an important part of the healing process. It also lessens the likelihood of skin infection. Foods high in vitamin A include spinach, carrots, salmon, eggs, and so on. It should be mentioned that because Vitamin A is water insoluble, it is not discharged by the urine and so remains retained in the body; consequently, it must be eaten in moderation.

Vitamin B3

Vitamin B3 is thought to aid in the maintenance of a healthy neurological system. It's also considered to help NSAIDs (nonsteroidal anti-inflammatory medications) work better.

Vitamin C

1. It aids in the production of collagen, a protein essential for the development of connective tissues. It aids in the recovery of bones while also maintaining their health. Oranges, pineapples, sprouts, and other citrus fruits are good sources of vitamin C.
2. **Physical healing:** Vitamin C is required for the repair of tissue, skin, cartilage, tendons, ligaments, and blood vessels. It is required for wound healing and also assists in bone restoration. It is obvious that without Vitamin C in our systems, our bodies would be unable to operate properly.
3. **Stroke:** Did you know that persons with the greatest levels of vitamin C in their blood have a 42% reduced chance of having a stroke than those with the lowest levels? In these instances, vitamin C aids in the maintenance of healthy circulation [6].

Vitamin D

1. Vitamin D regulates and modifies the physiology and function of several human systems, including skeletal muscle. It is required for calcium absorption, serum calcium and phosphate concentrations, proper bone mineralization, and prevention of hypocalcemic tetany. It is also required by osteoblasts and osteoclasts for bone development and remodelling.
2. Vitamin D deficiency is linked to rickets in children and osteomalacia in adults, a condition in which bones soften and lose their integrity.

Vitamin E

Another antioxidant is vitamin E, which aids in the healing of damaged tissue as well as the prevention of future injury. It can help to increase circulation and immunity while also reducing pain [6].

Fish oil

1. Fish oil tablets include omega-3 fatty acids, which are linked to a healthy heart and beautiful skin. It does, however, assist in the support of the joints. Fatty acids are believed to help decrease inflammation by preventing specific enzymes from harming the joints. If you have rheumatoid arthritis or suffer from knee discomfort, this vitamin is very beneficial.
2. Fish, avocados, almonds, and seeds are all excellent sources of omega-3 fatty acids.

Other Foods Beneficial for Bone Fractures

Aside from having enough calcium and vitamin D, getting enough of the following nutrients might help you recover faster from a bone fracture:

1. **Vitamins K1 and K2:** Helps increase bone strength by directing calcium to the bones. Leafy greens, Brussels sprouts, prunes, sauerkraut, natto, miso, organ meats, egg yolks, and grass-fed dairy products are all good sources.
2. **Arginine:** This amino acid is required for the production of nitric oxide, a molecule that aids in the healing of fractures. Meat, dairy, poultry, shellfish, almonds, and oats are some of the finest sources of iron.
3. **Magnesium:** Magnesium helps to strengthen and stiffen bones. Almonds, cashews, peanuts, potato skins, brown rice, kidney beans, black-eyed peas, lentils, and milk all contain this nutrient.
4. **Silicon:** Plays a crucial function in bone development in the early stages. Whole grains and cereals, as well as carrots and green beans, are excellent providers of iron.
5. **Inositol:** Aids in the absorption of calcium by the bones. Cantaloupe, grapefruit, oranges, and prunes are all high in this antioxidant.
6. **Boron:** Boron improves bone health by boosting calcium and magnesium retention and amplifying the effects of vitamin D. The finest dietary source is prunes.
7. Therefore, Foods rich in these nutrients should be consumed on a regular basis by those recuperating from bone fractures.

Conclusion

We have thus seen how important nutrition is while undergoing physiotherapy. We have seen how the two are directly connected. Various points have been observed which reflect fact that nutrition speeds up the recovery process and moreover. A physiotherapist should have knowledge about the same to provide efficient treatment to patients.

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Citation: *Tarapure R, Deshmukh N, Chaudhary S, et al. Importance of nutrition in physiotherapy. Arch Gen Intern Med 2022;6(4):117*