

LINKING NUTRITION RESEARCH TO PRACTICE.....

## THIS MONTH FEATURED ARTICLES

- Ø CAPTURE OF THE MONTH
- Ø ARTICLE OF THE MONTH The Science of Muscle Building Principles and Benefits
- Ø FOOD OF THE MONTH Beet Root Juice
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# **MESSAGE FROM EDITORS**

## "EXPLORING INTERMITTENT FASTING: WEIGHT LOSS SOLUTION OR HIDDEN RISKS?"

Intermittent fasting (IF) has been now discussed as a technique for weight loss and better metabolic health. Influencers and healthcare workers alike magnify its benefits on various social media platforms, often without a solid grounding in evidence-based science. As coeditors of this month's nutrition newsletter, we aim to highlight the importance of preserving muscle mass and, therefore, explore the concept of intermittent fasting, examining its potential benefits and hidden risks, particularly in maintaining muscle mass.

Intermittent fasting involves cycling between periods of eating and fasting. Standard methods include the 16/8 method (16 hours of fasting, 8 hours of eating). *P*romoters claim that IF can lead to weight loss, enhanced insulin sensitivity, and metabolic health.

Some studies suggest that IF promotes weight reduction, including losing visceral fat. This is often attributed to reduced caloric intake and improved metabolic efficiency. Furthermore, IF may improve insulin sensitivity, which is beneficial in type 2 diabetes or to prevent developing prediabetes to diabetes. Fasting periods can trigger autophagy, a process in which cells remove damaged components. This process could reduce the risk of several cancers.

The risk of getting nutritional deficiencies is a common drawback of IF. Extended fasting leads to inadequate nutritional intake, which can impact overall health. IF can sometimes promote disordered eating patterns and can exacerbate eating disorders in susceptible individuals.

Even though weight loss is the primary goal, the main key concern is the potential for muscle mass loss since it negatively affects basal metabolic rate and physical performance.

Preserving muscle mass while losing weight is a critical concern. The success of intermittent fasting in maintaining muscle mass is debated. Integrating IF with resistance training and sufficient protein intake is an emerging approach under evaluation for preventing muscle loss. However, without proper evidence, individuals may compromise their muscle mass.

Intermittent fasting presents both promising benefits and potential risks. As healthcare professionals, we must rely on evidence-based research when recommending dietary practices. However, the popularity of intermittent fasting on social media platforms often lacks the support of rigorous scientific study, which can lead to misinformation and potentially harmful practices being disseminated to the public. We encourage our readers to approach intermittent fasting with a critical eye. Evaluate the existing research, consider individual patient needs, and avoid jumping on the popular trends without substantial evidence.

Stay informed, stay healthy. Dr. Wasana & Dr. Dharani

# CAPTURE OF THE MONTH

# " THE BODY ACHIEVES WHAT THE MIND BELIEVES"

## THE SCIENCE OF MUSCLE BUILDING : PRINCIPLES AND BENEFITS

## By Dr. Rangana Hettige Consultant Sports and Exercise Medicine Physician Exercise

Building up of muscles is a topic discussed in human civilizations all over the world for a long time. Initially, it was all about physical appearance and showing masculinity but later it is about improving performance in sports. Morerecently, muscular fitness has shown health benefits for having a better lifestyle. This article focuses on health-related fitness characteristics.

# Importance of having good muscular fitness:

- Strength and Functionality: Muscles provide the strength necessary for daily activities, such as lifting objects, walking, and maintaining posture. A good muscle bulk ensures that you can perform these tasks efficiently and with a reduced risk of injury.
- Metabolic Health: The muscle tissue is metabolically active, meaning it burns calories even at rest. Maintaining good muscle bulk can boost metabolism, which helps with weight management and overall metabolic health.
- Bone Health: Resistance training, which is essential for building and maintaining muscle bulk, also stimulates bone growth and density. This is crucial for preventing osteoporosis and reducing the risk of fractures, especially as you age.
- Joint Support: Strong muscles provide support and stability to your joints. This is particularly important for areas like the knees, hips, and lower back, where muscle weakness can lead to joint pain and dysfunction.
- Functional Independence: Having adequate muscle bulk can contribute to functional independence as you age. Strong muscles can help maintain mobility and reduce the risk of falls, allowing you to remain active and independent for longer.



- Mental Health: Regular exercise, including strength training to maintain muscle bulk, has been shown to have positive effects on mental health. Exercise releases endorphins, which can reduce stress, anxiety, and depression.
- Disease Prevention: Maintaining good muscle mass is associated with a reduced risk of various chronic diseases, including type 2 diabetes, hypertension, cardiovascular disease, and certain cancers.

Components of muscle fitness:

- 1. Muscle strength- the maximum ability of a muscle to develop force or tension
- 2. Muscle hypertrophy- muscle bulking via increasing muscle cell size.
- 3. Muscular endurance- holding power of muscles
- 4. Muscle power- the maximum ability to apply a force or tension per a given unit of time

All these components are essential in sports performances. For health benefits muscle bulking component is important. Thus, this article concentrates more on muscle hypertrophy. It is important to keep in mind that any resistance training program improves all muscle fitness components but a lesser amount than specifically focused programs of strength, hypertrophy, endurance, and power

#### Clearance for doing resistance exercise

Every person cannot get into developing muscles without clearance for lifting, for example, diabetes with end-organ damage have to restrict weight training to prevent further organ damage. Also, if you are planning to start a weight training program, it is good to check your blood parameters to have an idea and to do the modifications.

#### Muscle building principles

Skeletal muscles make our muscle-bulk. Sarcomeres are the contractile unit of the muscle cells, which consist of thick and thin filaments that slide during contraction and reduce muscle length. There are two types of contraction, namely concentric and eccentric contraction. Concentric contraction means lifting against gravity by shortening muscle length and increasing tension. Eccentric contraction means slowly dropping the weight towards gravity while increasing tension and muscle length.

In humans, muscle growth happens with hypertrophy which means increasing the size of the muscle cells not by hyperplasia. The foundation of muscle building is micro tears that occur in muscle fibers when lifting. The controlled eccentric contraction causes more micro tears than a concentric contraction. As such, eccentric contraction is important in muscle hypertrophy.





## Muscle building happens according to a few principles:

- Progressive overload
- Maintain a positive protein balance
- Hormonal contribution
- Individuality / Genetics

#### Progressive overload

Overload is applying stress to the body over and above that which is normal. Overload can be achieved not only by increasing lifting weight/volume but reducing rest time, and increasing intensities. In other words, you don't have to increase your weight every day to achieve hypertrophy, which is to achieve in the human impossible body. Concentrating on eccentric lifting helps with muscle building.

For health-related fitness, more concentration needs to be on large muscle groups such as the shoulder, chest, legs, back, and core muscles rather than on small individual muscles like biceps or triceps muscles. Another important factor is choosing exercises that work multiple joints such as squats, bench presses, and deadlifts rather than single joints.

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For the hypertrophy, one can use the below pattern as a guide for muscle building:

Lifting volume - 8-12 repetitions X 1-3 sets X rest less than 2 minutes X 70%-90% of one repetition maximum (1-RM)

Lifting pattern - Slow on eccentric x Large muscle groups involving multiple joint exercises

Lifting frequency- 1-3 times per week. This is essential for muscle healing and recovery, without rest in between muscles won't grow.

As a principle, do not increase the weight by more than 10% from the previous week

#### Hormonal contribution

Muscle building is an anabolic process, anabolic hormones such as insulin-like growth factor-1, testosterone, and growth hormone helps to increase muscle mass following the exercise bout. Several methods are used to improve the anabolic state in the body and be careful about doping rule violations.





#### Positive protein balance

Proteins are muscle-building blocks, and for muscle building, one has to keep a positive protein balance, which means amino acids should be available as a substrate to reduce protein breakdown. Keeping a positive protein balance is important in pre and postworkout periods. Other than the building block, it acts as a fuel resource when carbohydrate is depleted. These exercises are mostly anaerobic exercises and fat used as substrate is less. For this reason, it is important to ensure the availability of carbohydrates with protein for muscle building to prevent the breakdown of expensive protein to replace cheap carbohydrates.

## How much protein is needed for muscle building?

For muscle hypertrophy, athletes can take from 1.6 grams/kg to 2.2g - 2.6 gram kg per day. The amount depends on the target, body type, and kidney and liver functions.

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### How frequently should you take the protein?

It's important to keep a positive protein balance throughout the day for the competitive-level bodybuilder to develop muscle in the hypertrophy phase of periodization. Some used to take every 2-4 hours during this period. But for medical-related muscle build, taking a 3-meal diet with a good amount of protein may be sufficient. Containing protein 20-40 grams per meal will boost muscle building. If one wants to develop more muscle bulk, one can add an extra snack composed of more protein.

#### **Proper rest**

The famous quote in Bodybuilding Arena is "Muscle building does not happen at the gym but at home". Proper rest and good sleep (at least 7-8 hours) are needed for good recovery from the exercise bout.

# What if you don't have good rest and sleep?

Repairing of micro-tears is mostly happening during this period. If you don't have a good rest, recovery will be delayed and persistent Delayed Onset Muscle Soreness (DOMS) will occur and prevent the achieving targets.

#### Genetics / individualized program

You might see, that some are gifted with genes that need little effort to build muscle, in the meantime some may not develop muscle even after heavy lifting for years. According to genetical morphology, people are divided into 3 categories as

- 1. Endomorphs- respond with the correct program quickly gain muscle while having a high-fat percentage,
- 2. Mesomorphs respond with the correct program quickly gain muscle while having less fat percentage, and
- 3. Ecto morphs slow response even with the correct program on muscle gain.



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- Do not only engage with resistant exercises but also do cardiorespiratory exercises, flexibility, coordination, and balance exercises as a routine
- Resistant training is highly individualized; One program fit for all won't work
- Change the program and components every 8-12 weeks
- Adjust the exercises according to the disease and other factors
- Correct technique is the key it will reduce jointrelated injuries
- § When you lift make sure to exhale to prevent increasing intra-abdominal pressure

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## "The Role of Beetroot in Enhancing Athletic Performance and Muscle Recovery: Nutritional Benefits and Mechanisms"

## By Dr. Wasana Marasinghe

Beetroot is botanically called Beta vulgaris. Beetroot juice has gained popularity among athletes who aim for athletic performance and muscle recovery. Its vasodilatory effects can be used to prevent and treat cardiovascular disease and improve cognitive function.

Aside from the beneficial aspects of beetroot consumption, there may also be potential health risks. Drinking beetroot juice may quickly increase nitrate intake and stimulate the endogenous formation of *N*-nitroso compounds (NOC's), a class of compounds known to be carcinogenic. However, the literature on the adverse effects of beetroot juice is somewhat limited compared to its beneficial effects.

#### **Nutritional Profile of Beetroot**

Beetroot is rich in important nutrients that contribute to its healthy benefits. Beetroot is a significant source of vitamins and minerals such as vitamin C, folate, manganese, potassium, dietary nitrates, antioxidants, and dietary fibre.

Beetroot juice contains a high concentration of nitrate (up to 11.4 g/L). Fresh beet leaves are high in beta-carotene, iron, and calcium. Beetroot is rich in antioxidants and minerals such as potassium, magnesium, betaine, vitamin C, and sodium.





Nutrient content according to the USDA data base	100g of wet weight
Carbohydrate	9.96g
Proteins	1.68g
Fat	0.18g
Phytosterols	0.025g
Minerals	0.483g
Fibers	2g
Nitrate	25mg
	100g of dry extracts
Betalains	3.976g
Betacyanins	2.075g
Betaxanthins	1.901g
Phenolic	0.1899g

#### Antioxidant property

These bioactive phytonutrients have been proven as important ingredients for treating some chronic diseases, such as cardiac diseases, stroke, cancer, diabetes, and chronic respiratory diseases. For instance, betalains are a key antioxidant extracted from Beetroot. (Kavitha et al., 2013). The nitrate also has excellent nutritional value in Beetroot.

## Enhancing Athletic Performance and Promoting Muscle Recovery

Beetroot provides nitric oxide (NO) after consumption. The consumption of beetroot juice impacts oxygen delivery to skeletal muscles, muscle efficiency, and tolerance, thus significantly improving stamina and endurance. Athletes can bare at a higher intensity for a longer duration with less fatigue.

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Post-exercise inflammation can hinder muscle Beetroot is rich in antioxidants. recovery. particularly betalains. which has antiinflammatory property. These antioxidants help reduce oxidative stress, promoting faster muscle recovery. Following vigorous exercises, the body needs to replenish its nutrient stores-vitamins minerals in beetroot support muscle and The high potassium content recovery. in Beetroot regulates muscle function, and its natural sugars, combined with its nitrates, can help replenish glycogen stores more efficiently and prepare the body for the next workout.

#### Improving Cognitive Function

It has been recognized that nitric oxide could increase regional cerebral blood flow and improve cognitive function. Beetroot has received increasing attention as a nitric oxide generator. Several studies have found in the elderly that the supplementation of high nitrate in Beetroot could enhance their cognitive function (Presley et al., 2011); (Wightman et al., 2015).

#### **Practical Ways to Incorporate Beetroot**

Incorporating Beetroot into your diet can be easy and delicious. Here are some practical suggestions:

- Beetroot Juice: Drinking beetroot juice before workouts can immediately boost nitrate. Aim for about 500ml of beetroot juice a few hours before exercising.
- Salads and Sides: Add roasted or steamed Beetroot to salads, or enjoy it as a side dish.
- Smoothies: Blend with other fruits and vegetables for a nutrient-packed smoothie.
- Snacks: Beetroot chips are convenient snack options.



#### Conclusion

Beetroot is a potent source in enhancing athletic performance and muscle recovery. Its unique combination of nitrates, antioxidants, vitamins, and minerals makes it a proper addition to any diet, particularly for those focused on maintaining muscle mass and improving exercise endurance. By incorporating Beetroot into your meals, you can utilise its benefits to support your fitness goals and health.

As we emphasize the importance of exercise and nutrition this month, let us celebrate Beetroot for its remarkable contributions to better health and performance. Give Beetroot a try and experience the boost in your athletic journey.

#### References

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## SLMNA monthly clinical meetings

"Know The Myths And Evidence Of Weight Loss" was held on 19th March, 12.15 p.m to 1.15 p.m at ClinMARC Auditorium, NHSL by SLMNA in collaboration with SLCNP

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## Annual Workshop on Research Report Writing for SLMNA Members

Annual Workshop on Research Report Writing for SLMNA Members was successfully held on 18th of April 2024 at the Auditorium of Epilepsy building, NHSL-Colombo. Workshop was conducted by Prof. Upul Senarath Consultant community physician.









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## PAST EVENTS SINCE LAST PUBLICATION

## SLMNA monthly clinical meetings

A lecture on "Microbiota in irritable bowel syndrome" by Professor Stephen Schneider Consultant Gastroenterologist organized by **SLMNA** and **SLCNP** was held on 5th of April 2024 at neurotrauma auditorium- NHSL.





## Joint Clinical Nutrition Academic Sessions of Sri Lanka Medical Nutrition Association & Sri Lanka College of Nutrition Physicians 2024

Joint Clinical Nutrition Academic Sessions of Sri Lanka Medical Nutrition Association & Sri Lanka College of Nutrition Physicians 2024, was held on 28th and 29th of June 2024, at Galle Face Hotel, Colombo.













## PAST EVENTS SINCE LAST PUBLICATION

The inauguration ceremony of the joint academic session 2024 was held on the 28th of June 2024 at the Galle Face Hotel Colombo. During the event Dr. Nalinda Herath was formally inducted as the new president of SLMNA by the immediate past president Prof.Pujitha Wicramasinghe. we extend our heartfelt congratulations to and best wishes to Dr. for a fruitful year ahead.











## Joint Clinical Nutrition Academic Sessions of Sri Lanka Medical Nutrition Association & Sri Lanka College of Nutrition Physicians 2024

."We are privileged to announce the commencement of Prof. Narada Warnasuriya Oration, marking a significant milestone to the association's history. SLCNP is honoured to celebrate the outstanding contributions of Prof. Narada Warnasuriya who has dedicated over half a century for clinical service and teaching. The inaugural oration was delivered by Prof. Pujitha Wickramasinghe. His insightful presentation set a high standard for this prestigious series"











## Joint Clinical Nutrition Academic Sessions of Sri Lanka Medical Nutrition Association & Sri Lanka College of Nutrition Physicians 2024

"Launch of the "FEED THE PATIENT PROJECT" by Sri Lanka College of Nutrition Physicians and Sri Lanka Medical Nutrition Association, in collaboration with the Ministry of Health bestowed by Ruhunu Maha Kataragama Devalaya. The pilot project at Apeksha Hospital - Maharagama and a voucher was handed over ceremonially to support the initiatives. We extend our deepest gratitude to Ruhunu Maha Kataragama Devalaya for their support"



"The award winners for the best performances in MSc & MD were felicitated at the inauguration ceremony of the joint academic session 2024. Congratulation to our award winners"

Best Performance in MSc Human Nutrition 2024 - Dr Liyana Arachchilage Prarthana Madhushani Liyanaarachchi

Best Performance in MD Clinical Nutrition 2024 - Dr Rathnayake Mudiyanselage Yamuna Jayampathy Rathnayake





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## Joint Clinical Nutrition Academic Sessions of Sri Lanka Medical Nutrition Association & Sri Lanka College of Nutrition Physicians 2024

"Heartiest Congratulations for the winners of poster and oral presentations at the academic session 2024 which was held on 29th of June. The winners were announced by Prof Upul Senarath and awarded by Dr PC Vijayakumar and Prof. Pujitha Wickramasinghe"















## Joint Clinical Nutrition Academic Sessions of Sri Lanka Medical Nutrition Association & Sri Lanka College of Nutrition Physicians 2024

The joint academic session 2024 was held on 29th of June at galle face hotel. The event featured insightful lectures from guest speakers, enriching our knowledge. The session showcased impressive oral and poster presentations as well. Thank you to all who have presented and supported to make this event a success

SYMPOSIUM 1 - "REVITALIZE YOUR PLATE: DEBUNKING MYTHS AND TRANSFORMING EVIDENCE INTO PRACTICES"









SYMPOSIUM 2 - "NUTRITION IN CRITICAL CARE - CONTENMPORARY STRATEGIES "









Joint Clinical Nutrition Academic Sessions of Sri Lanka Medical Nutrition Association & Sri Lanka College of Nutrition Physicians 2024

SYMPOSIUM 3 - "Innovative Strategies in Clinical GI Nutrition"









SYMPOSIUM 4 - " NUTRITION ACROSS THE LIFE CYCLE - TRENDS IN CLINICAL NUTRITION FROM INFANCY TO ADULTHOOD"









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## PAST EVENTS SINCE LAST PUBLICATION

## Joint Clinical Nutrition Academic Sessions of Sri Lanka Medical Nutrition Association & Sri Lanka College of Nutrition Physicians 2024

Chairpersons & judge panels - Oral Presentations































## PERIPHERAL ACTIVITIES

NCD program for health staff on obesity month - Base hospital Mulleriyawa











## PERIPHERAL ACTIVITIES

Patient advocacy group at NHSL MNU













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Nutrition month programme on 14th of June 2024 at CSTH









## **UPCOMING EVENTS**

## SLMNA monthly clinical meetings





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Lunch will be provided

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