Understanding & Preventing Muscle Loss: The Role of Ensure & HMB

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Slide Number | Voice-Over Script | On-Screen Text | Video Description | Image/Infographic Suggestion |
| 1 | Hello, and welcome to the module on Muscle Health and Ensure.  *Click Start to begin the module.* | Muscle Health and Ensure  *Click Start to begin* | Soft animation, Abbott logo, uplifting music. | Abbott logo with the title "Muscle Health and Ensure" |
| 2 | Before we begin, let us watch a scenario. | **Scenario** Before we begin, let us watch a scenario. | The scene opens with a shot of a bustling Indian marketplace. A middle-aged man, Rajesh, is struggling to lift a heavy bag of groceries. He stops, panting, and clutches his back. *Add transition here* | Image of a busy Indian marketplace with people of all ages shopping. Rajesh is visibly struggling. |
| 3 | Rajesh: (Grunting) Arre yaar, this is getting harder every day. I used to carry these with no problem.   Sarita: (Concerned) Rajesh, are you alright? You seem to be straining a lot lately. | Rajesh: Arre yaar, this is getting harder every day.   Sarita: Rajesh, are you alright? | Rajesh (struggling to lift bag, wincing), Sarita (concerned expression, reaching out to help). *Add transition here* | Close-up of Rajesh's face showing strain and Sarita's concerned expression. |
| 4 | Rajesh: I don't know, Sarita. I feel weaker than before. Even climbing the stairs to our apartment feels like a marathon these days.   Sarita: Maybe you should see a doctor, Rajesh. This could be something serious. | Rajesh: I feel weaker than before. Sarita: Maybe you should see a doctor. | Rajesh (looking defeated, wiping sweat), Sarita (placing hand on his arm reassuringly). *Add transition here* | A visual showing Rajesh and Sarita walking slowly towards their apartment building, which appears to be several stories high. |
| 5 | (At the Doctor's Clinic) Dr. Sharma: Mr. Rajesh, your tests indicate some muscle loss. It's quite common as we age, but it's important to address it.   Rajesh: Muscle loss? But I eat well, I thought. What can I do about it, Doctor? | Dr. Sharma: Your tests indicate some muscle loss. Rajesh: What can I do about it, Doctor? | Dr. Sharma (explaining with a serious but reassuring expression), Rajesh (listening intently, worried). *Add transition here* | Image of Dr. Sharma reviewing test results with Rajesh in her clinic. |
| 6 | Dr. Sharma: We need to focus on a balanced diet with sufficient protein and consider supplements if necessary. Regular exercise is also crucial.   Sarita: So, a complete change in lifestyle, Doctor? Will he be alright? | Dr. Sharma: Balanced diet and supplements. Sarita: Will he be alright? | Dr. Sharma (nodding reassuringly), Sarita (looking hopeful), Rajesh (taking in the information). *Add transition here* | Medium shot of Dr. Sharma, Rajesh, and Sarita in the clinic, discussing treatment options. |
| 7 | Rajesh: (Determined) Alright, Doctor. I'm ready to do whatever it takes to get back my strength.   Sarita: We'll do it together, Rajesh! We'll make sure you get the right food and exercise. | Rajesh: I'm ready to do whatever it takes! Sarita: We'll do it together! | Rajesh (nodding with determination), Sarita (smiling encouragingly). *Add transition here* | Rajesh and Sarita leaving the clinic, holding hands, looking determined. |
| 8 | As seen from the above scenario... |  |  |  |
| 9 | Let us quickly look at the objectives of this module.   By the end of this module, you will be able to:  • Define muscle mass and its importance  • Explain the causes and consequences of muscle loss  • Identify methods to measure muscle health  • Discuss prevention strategies for muscle loss, including the role of nutrition and supplements  • Evaluate the benefits of Ensure in maintaining muscle health | **Learning Objectives** By the end of this module, you will be able to:   • Define muscle mass and its importance  • Explain the causes and consequences of muscle loss  • Identify methods to measure muscle health  • Discuss prevention strategies for muscle loss, including the role of nutrition and supplements  • Evaluate the benefits of Ensure in maintaining muscle health | Animate objectives visually, highlighting each as the VO mentions it. | Bulleted list of learning objectives with a relevant background image (e.g., a healthy person exercising). |
| 10 | Let's begin with Understanding Muscle Mass. One of the largest organs in the body. > 600 muscles ~50% of body weight Has 50% of all body proteins | Muscle – what do we know? • One of the largest organ in the body. • > 600 muscles. • ~50% of body weight • Has 50% of all body proteins | Zoom in on each point as it is mentioned, highlighting the text and adding relevant visuals. | Image of the human body with muscles highlighted, and stats about muscle mass displayed. |
| 11 | Next, it is important to know that Argilés JM, et al. J Am Med Dir Assoc. 2016;17(9):789-796; Keller K, Engelhardt M. Muscles Ligaments Tendons J. 2014;3(4):346-350; Koopman R, et al. J Appl Physiol (1985). 2009;106(6):2040-2048; Janssen I, et al. J Appl Physiol (1985). 2000;89(2):465-471. | Muscle - what do we know contd…….. Argilés JM, et al. J Am Med Dir Assoc. 2016;17(9):789-796; Keller K, Engelhardt M. Muscles Ligaments Tendons J. 2014;3(4):346-350; Koopman R, et al. J Appl Physiol (1985). 2009;106(6):2040-2048; Janssen I, et al. J Appl Physiol (1985). 2000;89(2):465-471. | Display the text with a background image of scientific journals and research papers. | Visual of journal articles and research data related to muscle physiology. |
| 12 | Additionally, Breakdown > Formation leads to MUSCLE LOSS Formation > Breakdown leads to ↑ MUSCLE MASS Lecker SH, et al. J Nutr. 1999;129(1S Suppl):227S-237S Waterlow JC. Q J Exp Physiol. 1984;69(3):409-438 Gordon BS et al. Int J Biochem Cell Biol 2013; 45(10):2147-2157 | Muscle - what do we know contd…….. Breakdown > Formation MUSCLE LOSS Formation > Breakdown ↑ MUSCLE MASS Lecker SH, et al. J Nutr. 1999;129(1S Suppl):227S-237S Waterlow JC. Q J Exp Physiol. 1984;69(3):409-438 Gordon BS et al. Int J Biochem Cell Biol 2013; 45(10):2147-2157 | Animate the arrows dynamically showing the relationship between breakdown and formation, illustrating muscle loss and gain. | Animated infographic showing muscle breakdown vs. muscle formation, with arrows indicating the direction of the balance. |
| 13 | Now that, mTOR - mammalian target of rapamycin regulator for cell growth, differentiation, survival, metabolism etc NF-B - Nuclear factor kappa B protein transcription factor & also considered a regulator of immunity MUSCLE PROTEIN SYNTHESIS MUSCLE PROTEIN DEGRADATION BALANCE | Muscle - what do we know contd…….. mTOR - mammalian target of rapamycin regulator for cell growth, differentiation, survival, metabolism etc NF-B - Nuclear factor kappa B protein transcription factor & also considered a regulator of immunity MUSCLE PROTEIN SYNTHESIS MUSCLE PROTEIN DEGRADATION BALANCE | Animate the diagram showing the interaction between mTOR, NF-κB, muscle protein synthesis, and degradation, highlighting the balance. | Diagram illustrating the mTOR and NF-κB pathways and their influence on muscle protein synthesis and degradation. |
| 15 | Let's move on to Understanding Causes of Muscle Loss. Click each image to know more. | Causes of muscle loss Click each image to know more. | *<Create an interactive infographic with clickable tabs for each sub-part. Each tab shows a separate slide on click. Only one tab is active at a time. Guide the learner through each item.*> | Interactive infographic with images representing different causes of muscle loss (e.g., aging, inactivity, poor nutrition, illness). |
| 16 | Now that, we know ageing is one of the reasonsHow much muscles do we lose due to ageing? | How much muscles do we lose due to ageing? | Show a graph illustrating the decline in muscle mass with age. | Graph showing muscle mass decline with age, highlighting the rate of loss. |
| 17 | Next is Pathological loss Underlying cause is chronic inflammation | Pathological loss Underlying cause is chronic inflammation | Show a visual representation of the inflammatory process affecting muscle tissue. | Image of inflamed muscle tissue, illustrating the pathological loss of muscle mass. |
| 18 | We will discuss, THE VICIOUS CYCLE Londhe P, Guttridge DC. Inflammation-induced loss of skeletal muscle. Bone. 2015;80:131-142 Chronic inflammation & muscle mass loss mTOR: Mammalian target of rapamycin  Akt/mTOR pathway is upregulated in muscle hypertrophy and downregulated in atrophy. It is the principal regulator of skeletal muscle protein synthesis  It interacts with muscle atrophy-inducing stimuli including myostatin and glucocorticoids. NF-B is activated and linked to acute pulmonary inflammation, which has been linked to muscle atrophy. Inhibit muscle differentiation mediated by TNF-α Through the control of MuRF1, skeletal muscle-specific overexpression of the NF-B pathway promotes severe atrophy. | THE VICIOUS CYCLE Chronic inflammation & muscle mass loss mTOR: Mammalian target of rapamycin  Akt/mTOR pathway is upregulated in muscle hypertrophy and downregulated in atrophy. NF-B: Nuclear factor kappa B | Animate the cycle showing the interaction between chronic inflammation, muscle mass loss, mTOR, and NF-κB. | Animated diagram illustrating the vicious cycle of chronic inflammation and muscle loss. |
| 19 | Next, the meta-analysis in which 63 included articles described 17,206 diseased individuals (mean age: 65.3 ± 1.6 years, 49.9% females) and 22,375 non-diseased controls (mean age: 54.6 ± 16.2 years, 53.8% females), the prevalence of sarcopenia in individuals with CVD was 31.4% (95% CI: 22.4-42.1%), no controls were available. The prevalence of sarcopenia was 26.4% (95% CI: 13.6-44.8%) in individuals with dementia compared to 8.3% (95% CI: 2.8-21.9%) in their controls; 31.1% (95% CI: 19.8-45.2%) in individuals with diabetes mellitus compared to 16.2% (95% CI: 9.5-26.2%) in controls; and 26.8% (95% CI: 17.8-38.1%) in individuals with respiratory diseases compared to 13.3% (95% CI: 8.3-20.7%) in controls. | Prevalence of muscle loss in India 4 out of 10 Indian adults suffer from muscle mass loss Heart disease – CVD Neuroloigcal diseases – Dementia Metabolic – DM Respiratory - COPD Exp Gerontol. 2020 Mar;131:110801. | Show a map of India with statistics on muscle loss prevalence highlighted for different regions. | Map of India showing the prevalence of muscle loss in different states, with infographics representing associated diseases. |
| 20 | Additionally, THE MORE MUSCLE MASS LOST, THE HIGHER THE RISK OF COMPLICATIONS THAT AFFECT RECOVERY Argilés HM, et al. JAMDA. 2016;17:789-796. 2. Demling RH. ePlasty. 2009;9:65-94. | Muscle mass loss if not corrected has consequences THE MORE MUSCLE MASS LOST, THE HIGHER THE RISK OF COMPLICATIONS THAT AFFECT RECOVERY Argilés HM, et al. JAMDA. 2016;17:789-796. 2. Demling RH. ePlasty. 2009;9:65-94. | Visual representation of complications arising from muscle loss, such as increased risk of falls, infections, and prolonged recovery times. | Infographic illustrating the complications associated with muscle loss, such as increased risk of falls, infections, and slower recovery. |
| 22 | Now let's move on to How can we measure muscle health? Click each tab to learn more. | How can we measure muscle health? Click each tab to learn more. | *<Create an interactive infographic or image with clickable tabs for each sub-part. Each tab shows a separate slide on click. Only one tab is active at a time. Guide the learner through each item.*> | Interactive infographic with clickable tabs for "Hand Grip Strength", "SARC-F", "SPPB", and "BIA". |
| 23 | Now that we know HAND-GRIP STRENGTH TEST Adapted from: https://photodune.net/item/hand-dynamometer-grip-strength-test/28757987 Easy to apply in clinical practice The muscle strength test is performed by a portable, well-calibrated handheld dynamometer Low HGS is associated with Chronic morbidities (including cardiovascular mortality) Functional disabilities (frailty, sarcopenia etc.), and All-cause mortality K. Norman et al. / Clinical Nutrition 30 (2011) 135e142 Am J Prev Med. 2016 Jun;50(6):677-683 | HAND-GRIP STRENGTH TEST Easy to apply in clinical practice The muscle strength test is performed by a portable, well-calibrated handheld dynamometer Low HGS is associated with Chronic morbidities Functional disabilities All-cause mortality | Show a demonstration of someone performing a hand-grip strength test. | Video of a person performing a hand-grip strength test with a dynamometer. |
| 24 | Let us discuss MUSCLE AGE TEST Step 1: Choose a suitable chair. The height of the chair should be approx. 43cm. Step 2: Use a timer to time yourself doing the Stand4Strength challenge. Sit-to-stand on both legs 5 times with arms folded as fast as you can. Step 3: Muscle age was calculated his 5 times stand4strength Bohannon R et al. Isokinetics and Exercise Science 15 (2007) 77–81 | MUSCLE AGE TEST Step 1: Choose a suitable chair. The height of the chair should be approx. 43cm. Step 2: Use a timer to time yourself doing the Stand4Strength challenge. Sit-to-stand on both legs 5 times with arms folded as fast as you can. Step 3: Muscle age was calculated his 5 times stand4strength | Show a demonstration of someone performing the "Stand4Strength" test. | Video demonstrating the "Stand4Strength" test, showing proper form and technique. |
| 25 | Next, Prevention of muscle mass loss | Prevention of muscle mass loss | Show images representing different prevention strategies, such as exercise, healthy eating, and supplementation. | Collage of images representing exercise, healthy food, and supplements for preventing muscle loss. |
| 26 | Let's see what -hydroxy--methylbutyrate (HMB) | -hydroxy--methylbutyrate (HMB) | Show a visual representation of the HMB molecule and its effects on muscle tissue. | Molecular structure of HMB and its impact on muscle protein synthesis. |
| 27 | Additionally, mTOR PROTEIN NF-B MUSCLE PROTEIN SYNTHESIS MUSCLE PROTEIN DEGRADATION Leucine HMB 5% conversion Helps improve LBM, Strength, body weight, reduce protein catabolism | HMB ACTION AND OUTCOMES mTOR PROTEIN NF-B MUSCLE PROTEIN SYNTHESIS MUSCLE PROTEIN DEGRADATION Leucine HMB 5% conversion Helps improve LBM, Strength, body weight, reduce protein catabolism | Animate the diagram showing the role of HMB in muscle protein synthesis and degradation. | Animated diagram illustrating the role of HMB in the mTOR and NF-κB pathways. |
| 28 | Next, Indian food equivalence data of leucine For healthy subjects to produce 1.5g of HMB about 30g of leucine is required | For healthy subjects to produce 1.5g of HMB about 30g of leucine is required | Show a visual representation of common Indian foods and their leucine content. | Infographic showing common Indian foods and their leucine content (e.g., lentils, nuts, dairy). |
| 30 | Now let's summarize THE IMPACT OF ONS-HMB ON CLINICAL OUTCOMES – summary Helps/ supports; Increase lean mass Increase hand grip strength Reduce protein catabolism in ill patients Prevent muscle loss in ICU patients Improve muscle strength Reduced mortality rate Hsieh, et al. Asia Pac J Clin Nutr. 2006;15:544-550. 2. Kuhls DA, et al. J Trauma. 2007;62:125-131. 3. Wu H, et al. Arch Gerontol Geriatr. 2015;61:168-175. 4. Wilkinson, et al. Clin Nutr. 2018;37:2068-2075, 5. Hsieh, et al. Asia Pac J Clin Nutr. 2010;19:200-208. 6. Hsieh, et al. Asia Pac J Clin Nutr. 2006;15:544-550. 7. Deutz, et al. Clin Nutr. 2013;32:704-712. | THE IMPACT OF ONS-HMB ON CLINICAL OUTCOMES – summary Helps/ supports; Increase lean mass Increase hand grip strength Reduce protein catabolism in ill patients Prevent muscle loss in ICU patients Improve muscle strength Reduced mortality rate | Show a visual representation of the benefits of ONS-HMB. | Infographic summarizing the clinical benefits of ONS-HMB supplementation. |
| 31 | Next, Conclusion: Consumption of ONS-HMB for six months, significantly improved muscle mass & strength ONS-HMB given to at-risk malnourished subjects (n=811) for 6mo along with dietary counseling Chew et al. 2021 | RCT too determine the effects of ONS-HMB along with dietary counseling, on health outcomes in community-dwelling older adults at risk of malnutrition >65y old, (n=811) 6 months | Show a graph or chart illustrating the improvement in muscle mass and strength with ONS-HMB. | Graph showing the improvement in muscle mass and strength in subjects taking ONS-HMB. |
| 32 | Additionally, 2022 Lin et al. Meta-analysis of 9RCTs (n=896) to evaluate the effect of the HMB on the muscle strength of adults Conclusion: Supplementation of HMB and preparations containing HMB ingredients aid in increasing muscle strength in the elderly population Lin Z et al(2022) Front. Nutr. 9:914866. | Meta-analysis of 9RCTs (n=896) to evaluate the effect of the HMB on the muscle strength of adults Conclusion: Supplementation of HMB and preparations containing HMB ingredients aid in increasing muscle strength in the elderly population | Show a meta-analysis chart or summary of the findings. | Visual summary of the meta-analysis showing the positive effects of HMB on muscle strength. |
| 33 | Let's move on to Nutrition helped improve HGS in Indian adults Huynh, D.T., Devitt, A.A., Paule, C.L., et al. (2015). Eﬀects of oral nutritional supplementation in the management of malnutrition in hospital and post-hospital discharged patients in India: a randomised, open-label, controlled trial. J Hum Nutr Diet, 28(4), 331-43. Study objective To evaluate the beneﬁts of DC plus ONS in newly admitted hospital patients with moderate or severe malnutrition Study design A prospective, randomized, controlled, parallel-design, multicenter trial with 12 weeks of intervention. DC: Dietary Counseling, ONS: Oral Nutritional Supplement, HGS: Handgrip Strength | Nutrition helped improve HGS in Indian adults Study objective To evaluate the beneﬁts of DC plus ONS in newly admitted hospital patients with moderate or severe malnutrition Study design A prospective, randomized, controlled, parallel-design, multicenter trial with 12 weeks of intervention. DC: Dietary Counseling, ONS: Oral Nutritional Supplement, HGS: Handgrip Strength | Show a chart summarizing the study design and results. | Chart summarizing the study design, participants, intervention, and results of the Indian study on nutrition and HGS. |
| 34 | Finally, Conclusion ONS use throughout hospital stay and post-hospital discharge signiﬁcantly improved energy intake and weight in malnourished Indian patients. | Changes in handgrip strength Conclusion ONS use throughout hospital stay and post-hospital discharge signiﬁcantly improved energy intake and weight in malnourished Indian patients. | Graph showing the changes in handgrip strength with ONS use. | Graph showing the improvement in handgrip strength in the ONS group compared to the control group. |
| 36 | Let's discuss Introducing Ensure | Introducing Ensure | Show an image of Ensure product packaging. | Image of Ensure product packaging. |
| 37 | Lastly, Ensure provides Complete, balanced nutrition – As per AMDR guidelines High Quality and Quantity of proteins- To support muscle health and strength Novel ingredient HMB -To help Build+ Protect Muscles strength Contains 28 vitamins and minerals for energy metabolism, strength, immunity and others 11 nutrients to support immunity FOS – Prebiotic fiber to support digestion Gluten free by nature Contains Sugars and Lactose – not for diabetics/ lactose intolerance/ tube feeding Can be mixed with water and milk | Ensure provides Complete, balanced nutrition – As per AMDR guidelines High Quality and Quantity of proteins- To support muscle health and strength Novel ingredient HMB -To help Build+ Protect Muscles strength Contains 28 vitamins and minerals | Show an animated infographic highlighting the key benefits of Ensure. | Animated infographic highlighting the key ingredients and benefits of Ensure. |
| 40 | Thank you for your time. We hope this module was helpful and informative. | **Thank You** | Positive, happy learner or instructor | Image of a smiling doctor or dietitian. |