



RUNNING THROUGH THE LIFESPAN

A guide for runners looking to
maximize longevity and
maintain fitness





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Running is an enjoyable and preferred form of exercise for many but is **only one component** of a complete exercise plan.

This guide serves to **supplement** and **improve** your running performance by suggesting modifications to complete a **comprehensive** exercise routine.

(note: no specific running training plans are included)

Below, you will find commentary on many types of exercise and how they may contribute to overall performance.



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INTRODUCTION & PHYSIOLOGY

Physical Activity Guidelines

Children and Adolescents 6-17 (1):

- 60+ minutes of moderate to vigorous physical activity daily
 - Cardiovascular - vigorous-intensity physical activity at least 3 days a week
 - Muscle strength - part of the 60 minutes at least 3 days a week
 - Bone strength - part of the 60 minutes at least 3 days a week



Adults 18-64 (1):

- Cardiovascular - at least 150-300 min moderate-intensity OR 75-150 min vigorous-intensity aerobic physical activity per week
- Additional health benefits are gained by engaging in more than 300 min of moderate-intensity per week
- Strength - moderate-intensity involving all major muscle groups 2+ days per week

Older Adults 65+ (1):

- Continue with the guidelines for adults if possible
- Regular, safe, multicomponent physical activity
 - Balance
 - Cardiovascular
 - Strength training
- If unable to do 150 min of moderate-intensity aerobic activity, be as physically active as abilities allow

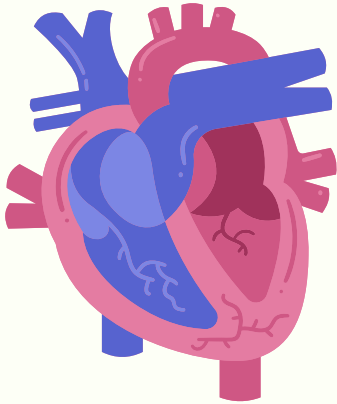
Intensity Levels:

Light - non-sedentary behavior, conversational

Moderate - increased heart rate & breathing but can talk

Vigorous - unable to hold a conversation

Cardiovascular training



According to the American College of Sports Medicine (ACSM), cardiovascular training is any activity that (1):

1. Involves large muscles of the body
2. Has rhythmic and continuous movements
3. Challenges the heart and lungs to work harder

- AKA aerobic or cardiorespiratory training
- Aerobic = “with oxygen”
 - Harder breathing for lungs to supply more oxygen
 - Faster heart rate to deliver blood to working muscle
 - Muscles use oxygen to generate energy to keep working
- Increases efficiency and endurance of heart and lungs
- Can vary from light, moderate, or vigorous intensity

What’s in it for me? (2)

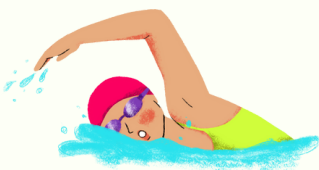
- Cardiovascular health
- Increases energy and stamina
- Blood pressure management
- Improves blood lipid profile (cholesterol)
- Weight management
- Reduced risk of cardiovascular & chronic diseases
- Mental well-being and stress relief
- Bone health



“Cardiovascular exercise is important for adults because it significantly improves heart health, lung function and overall endurance by increasing your heart rate and breathing during exercise”
- ACSM (1)



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1. Patel, H., Alkhwam, H., Madanieh, R., Shah, N., Kosmas, C. E., & Vittorio, T. J. (2017). Aerobic vs anaerobic exercise training effects on the cardiovascular system. *World journal of cardiology*, 9(2), 134–138. <https://doi.org/10.4330/wjc.v9.i2.134>
2. Nystoriak, M. A., & Bhatnagar, A. (2018). Cardiovascular Effects and Benefits of Exercise. *Frontiers in cardiovascular medicine*, 5, 135. <https://doi.org/10.3389/fcvm.2018.00135>

Strength training

According to the ACSM, strength training is any activity that (1):

1. Has intense physical activity for a very short duration
 2. Is fueled by energy sources within contracting muscles
- AKA anaerobic or weight training
 - Anaerobic = “without oxygen”
 - Body uses energy stored in muscles, not oxygen
 - Increases power, strength, and endurance of muscles



WHAT'S IN IT FOR ME?

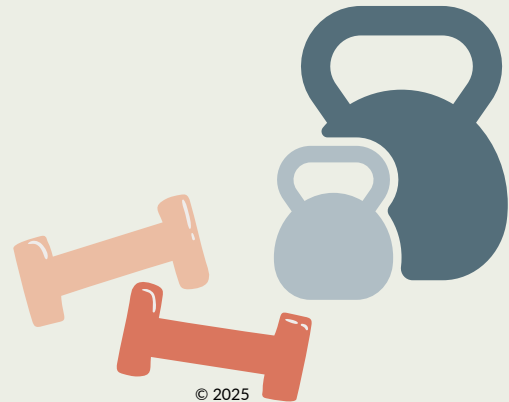


- Shorter workouts
- Increased muscle power/strength
- Improves speed
- Maintains muscle mass
- Gain bone mass and density
- Mood improvement
- Joint health - strengthens muscles, tendons, & ligaments
- Improves blood glucose (1)

SPECIFICS

Examples:
Weight lifting
High-intensity
interval training
(HIIT)
Sprinting
Plyometrics

Equipment options:
Bodyweight
Bands
Machines
Free weights
(dumbbells/
kettlebells)



FACTS

“Decreases in muscle size and strength of 10-15% per decade are observed after the age of 50 years, with increasing rates of loss after the age of 65” (2)

CAN HAVE A LARGER RISK OF INJURY DUE TO LACK OF TRAINING ON FORM

1. Patel, H., Alkhwam, H., Madanieh, R., Shah, N., Kosmas, C. E., & Vittorio, T. J. (2017). Aerobic vs anaerobic exercise training effects on the cardiovascular system. *World journal of cardiology*, 9(2), 134-138. <https://doi.org/10.4330/wjcv.v9.i2.134>
2. Lowndes, J., Carpenter, R. L., Zoeller, R. F., Seip, R. L., Moyna, N. M., Price, T. B., Clarkson, P. M., Gordon, P. M., Pescatello, L. S., Visich, P. S., Devaney, J. M., Gordish-Dressman, H., Hoffman, E. P., Thompson, P. D., & Angelopoulos, T. J. (2009). Association of age with muscle size and strength before and after short-term resistance training in young adults. *Journal of strength and conditioning research*, 23(7), 1915-1920. <https://doi.org/10.1519/JSC.0b013e3181b94b35>

Flexibility

According to the ACSM, flexibility is any activity that (2):

1. Is able to move a joint through its complete ROM (range of motion)
- Having limited flexibility can limit the amount of strength gain (2)

F	≥ 3 days a week, daily is most effective
I	to slight discomfort or point of tension
T	2-4 reps, building to 30-60 sec holds
T	static, dynamic, and passive



Types of Flexibility: (1)

Static Flexibility

- Holding a stretch in its end range of motion for a period of time
- Hold for 10-30 seconds, rest, and repeat 2-4 times
- Recommended as part of a cool down after a workout
- Muscle and connective tissue lengthen progressively
- Ex: calf, quad, or hamstring stretch

What's in it for me? (3)

- Increased range of motion
- Reduced risk of muscle strains
- Enhanced balance & stability
- Improved posture
- Muscle relaxation & stress relief
- Reduced pain/discomfort - release tension
- Joint maintenance - decreased stiffness and pain
- Aging well - preserve independence & quality of life



Dynamic Flexibility

- Requires continuous movement and momentum
- Perform continuously for about a minute, only holding one position for 2-3 seconds
- Good way to warm up for aerobic exercise
- Requires balance and coordination
- Ex: arm circles and leg swings



Passive Flexibility

- Reaching & holding an intended position
- Achieved with external assistance
- Equipment:
 - Another person
 - Gravity
 - Stretching strap
- Can also enhance balance
- Ex: hamstring stretch w/strap

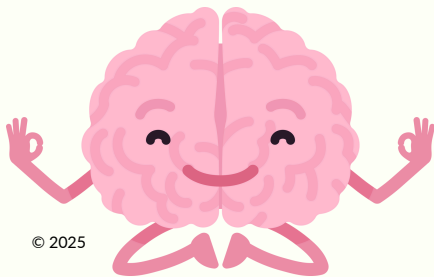
1. Bailey, M. (2024, September 3). *Types of stretching - which is best for you?*. MUSC Health. <https://advance.muschealth.org/library/2024/september/types-of-stretching>
 2. Bushman, B. A. (2016). Flexibility Exercises and Performance. *ACSM'S Health & Fitness Journal*, 20(5), 5-9. <https://doi.org/10.1249/fit.0000000000000226>
 3. PHED 1010 - *Concepts of Fitness and Wellness: Flexibility*. Libraries Georgia Highlands College. (2024, December 12). <https://getlibraryhelp.highlands.edu/c.php?g=577032&p=4224840>

WHY TO EXERCISE



Physical Benefits

- Improves cardiovascular health
- Increases bone density
- Builds muscle and strength
- Boost metabolism
- Helps with weight management
- Reduces pain
- Maintains ability to perform activities of daily living
- Reduces fall risk
- Reduces risk of chronic diseases (1)



Mental Benefits

- Reduces stress, anxiety, and depression
- Improves sleep quality
- Enhances cognitive function
- Increases self-esteem and confidence (2)

“Running is just an essential part of my mental health” - Ed, 50



Other Benefits

- Improves overall well-being and mood
- Encourages socialization
- Increases independence
- Prolongs life expectancy

(1) Qiu, Y., Fernández-García, B., Lehmann, H. I., Li, G., Kroemer, G., López-Otín, C., & Xiao, J. (2023). Exercise sustains the hallmarks of health. *Journal of sport and health science*, 12(1), 8–35. <https://doi.org/10.1016/j.jshs.2022.10.003>

(2) Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: the evidence. *CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne*, 174(6), 801–809. <https://doi.org/10.1503/cmaj.051351>

DECADES

Exercise Throughout the Decades

For each decade:

1. Description of common physiological issues faced in exercise
2. Areas to focus on for training
 - a. Specifically to improve longevity of running

Mid to late teens - the Maturing Phase **page 10**

20s & 30s - the Gaining Phase **page 13**

40s & 50s - the Maintaining Phase **page 16**

60s & 70s - the Keep Going Phase **page 19**

80+ - the And Beyond Phase **page 23**

“Over the years we all tend to experience the joy and frustration that comes with age” - Bill, 78

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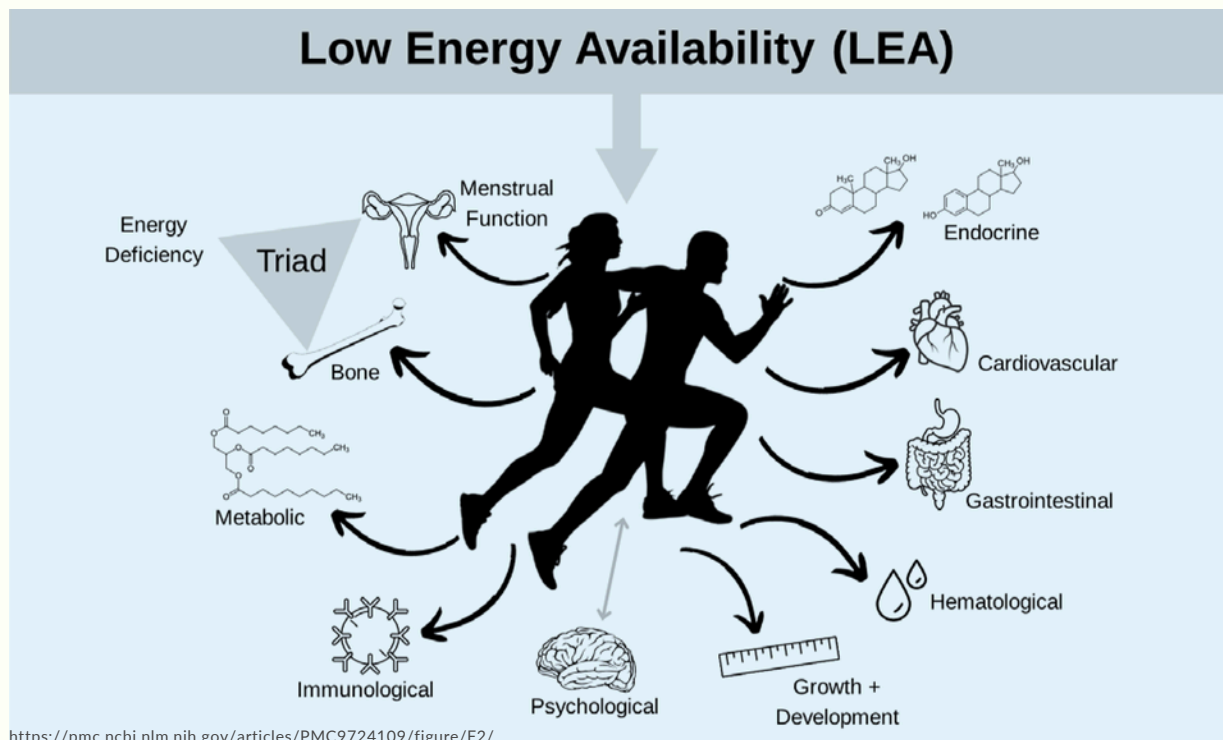
Mid to late teens - the Maturing Phase

Relative Energy Deficiency in Sport (RED-S) (1):

A condition when athletes don't consume enough calories to meet their energy needs



- Burn more calories than they take in
- Can affect anyone, with an increased presentation in females
- Can lead to short term improvements but overall causes damage



- Depicts the physiological effects of insufficient energy consumption
- Difficult to maintain basic bodily functions
- Includes the Female athlete triad (see next page)

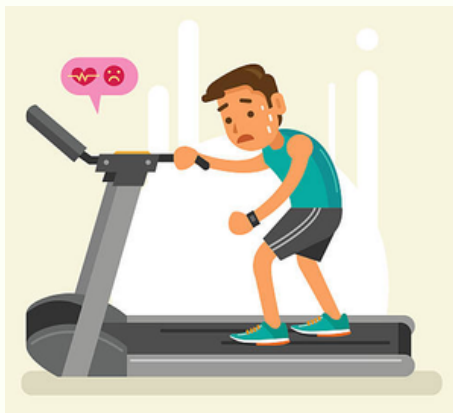
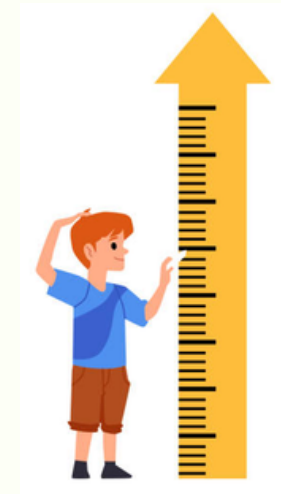
Mid to late teens - the Maturing Phase

Physiological consequences:

- Menstrual dysfunction
- Delayed growth & development
- Altered hormones
- Inhibited bone mineral density formation
- Impaired immunity & protein synthesis
- Decreased cardiovascular health



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Impairments to athletic performance:

- Significantly higher risk for injury
- Lack of response to training
- Reduced strength & endurance
- Decreased coordination & concentration
- Higher risk for osteoporosis later on (refer to page 17)

Female athlete triad (subset of RED-S) (1):

Medical condition affecting young women who are physically active

3 interrelated conditions:

- 1) Disordered eating
- 2) Irregular menstruation
- 3) Bone loss

Training focus for mid to late teens

01 Be a multi-sport athlete & participate in a variety of activities

- Move body in a variety of directions & planes
- Increase coordination, strength, and stability
- Activate larger variety of muscles to help prevent injury
- Involve smaller stabilizing muscles & tendons

02 Focus on running mechanics, speed, and form

- Create healthy habits & body alignment to set up for future success

03 Regulate the intensity and distance during training

- Less miles & higher intensity creates longer success
- Prevent overuse of the body in high school

04 Fuel adequately

- Must consume enough calories for performance results
- Protein & carbohydrate rich foods after a run

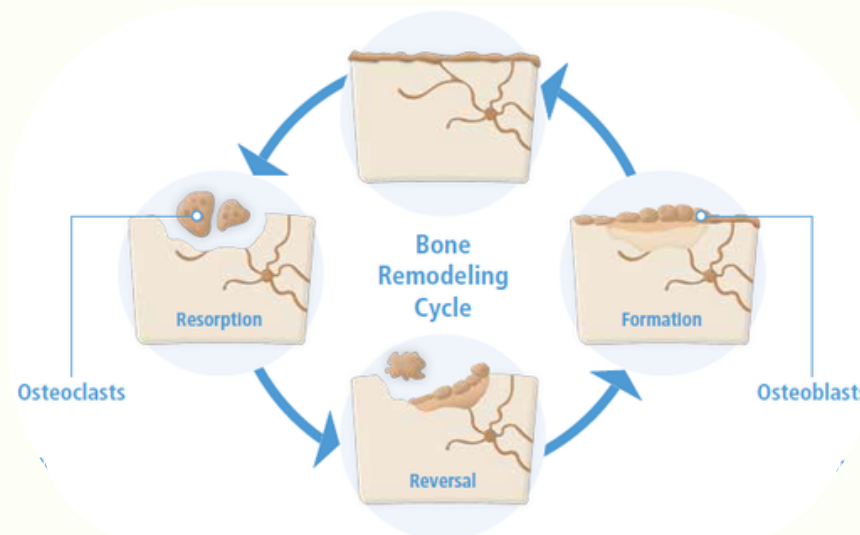
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“What you do in these years are habits you will revert back to. You will revert back to middle school food habits and thoughts as you get older and are in mother age” - Kimber Finan, Exercise Science professor

20s - the Gaining Phase

Bone Mineral Density Formation

- Definition: when the body builds new bone faster than it breaks down old bone
- Goal: achieving a high peak bone mass to slow bone loss with aging
- Factors influencing bone density:
 - Genetics
 - Calcium intake
 - Vitamin D - necessary for calcium absorption
 - Weight-bearing exercise
- A decrease in bone mass & strength can lead to osteoporosis (refer to page 17)

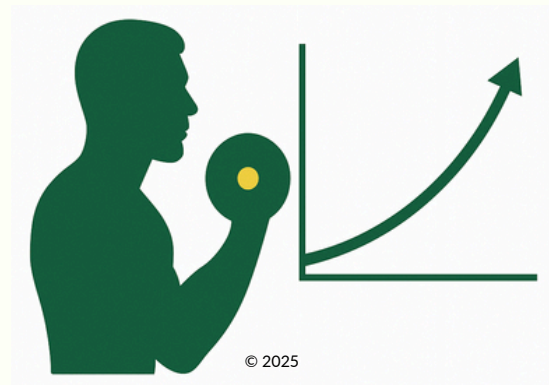


The phases of the bone formation cycle to reach peak bone mineral density

<https://www.osteoporosis.foundation/health-professionals/about-osteoporosis/bone-biology>

Peak Strength Gain

- Prime age for building & maximizing muscle strength
- Creates a foundation for fitness and muscle building
- Influenced by physiological peak, hormone levels (testosterone), natural muscle development & recovery abilities
- Starts to decline with age through sarcopenia (see page 16)



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30s - the Gaining Phase

Maximizing Stability

- Might experience instability & weakness in core or spine
- Anatomical causes of instability:
 - Lack of pelvic control
 - Lack of joint mobility - influences hip, knee, and ankle
 - Lack of core strength
- Focus on training stabilization muscles within strength training
 - Retraining muscles will increase overall running mechanics



The Niggles

- A minor uncomfortable feeling in a muscle or joint causing you to slow down but not stop exercise
- Most common:
 - Tight calves, hamstrings, hip flexors, quads, and upper back
 - Knee pain
- Cross train or pause exercise until symptoms subside
- Listen to your body - don't ignore the niggles because they can turn into injury
- Prevention is better than care
- What could be treated as a niggles in your 20s cannot be ignored in your 30s and beyond



Peak Cardiovascular Fitness

- AKA aerobic capacity or cardiovascular endurance
- Typically peaks from ages 25-35
- Reach maximum aerobic capacity & heart function
 - Make the heart work as efficiently as possible



Training focus for 20s & 30s

01 Listen to the body

- If you feel small discomfort, take some time off and address the issue preventing a future injury

02 Well rounded workout plan

- Includes strength training, cardio, flexibility, and balance
 - Strength training:
 - Focus on main muscle groups
 - Focus on deep stabilization muscles
 - Integrate some balance

03 Begin to integrate flexibility

- Lateral movements before running to activate stabilization muscles
 - Ex: side lunges, grapevine, side shuffles, and side step-ups
- Stretching after running/workout

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04 High impact endurance training

- To increase bone density formation
- Structure exercise as:
 - High in rate - high intensity & heart rate
 - Low in magnitude - short duration & less miles

05 Run on a variety of surfaces & inclines

- Varying terrain makes your body respond more, involving your brain
- Pavement/sidewalk (hardest) → road → turf, grass, & trail (softest)
- Significant training on hard surfaces → beating body up → stresses bones, muscles, & joints → lack of strength to control landing → more force through body

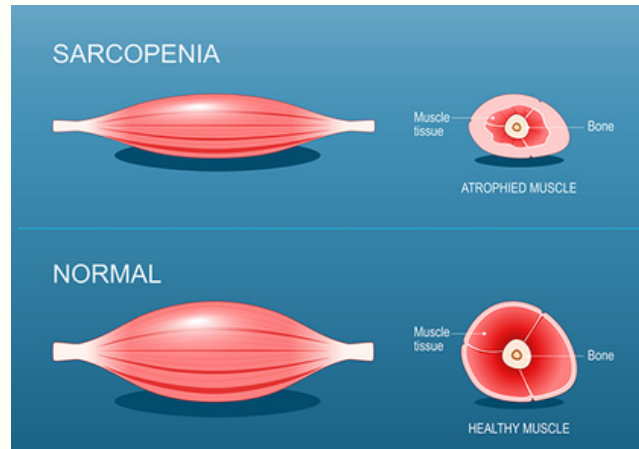
06 Continue adequate fueling & water consumption

- Eating a well-rounded diet and consistent meals
- Drinking necessary fluids based on activity

40s - the Maintaining Phase

Sarcopenia

- An age-related gradual loss of muscle mass, strength, and function (see image on the right)
- “One of the most important causes of functional decline and loss of independence in older adults (1)”
- May affect activities of daily living and functional ability
- Associated with a greater frequency of falls
- Increased fracture risk
- Causes typically due to the natural process of aging



<https://www.womenshealthnetwork.com/bone-health/are-you-at-risk-for-sarcopenia-muscle-loss-aging/>

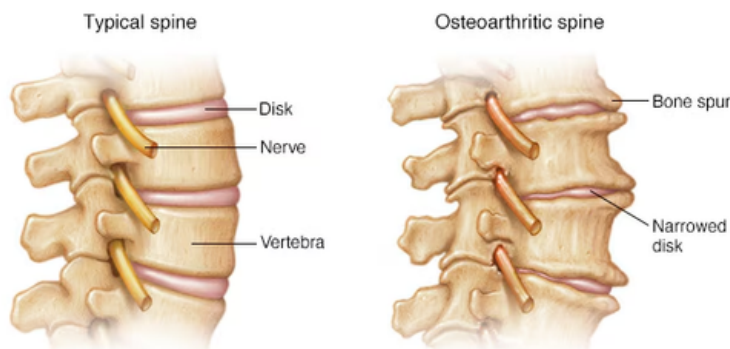
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Treatment:

- Strength training (preventing & managing condition)
- Increasing protein intake

Osteoarthritis

- A chronic joint disease that causes the breakdown of cartilage
 - Cartilage - the smooth tissue that cushions and protects the ends of bones
- The most common joint disorder in the US and leading cause of disability for the elderly (2)
 - More common in women
- Affects weight-bearing joints, commonly knee, hip, and spine (see image on the left)
- Presents as pain, stiffness, swelling, and loss of joint function
- Is not caused by running, but could increase the risk
- High impact training and overtraining earlier in life could increase the risk



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<https://www.mayoclinic.org/diseases-conditions/osteoarthritis/symptoms-causes/syc-20351925>

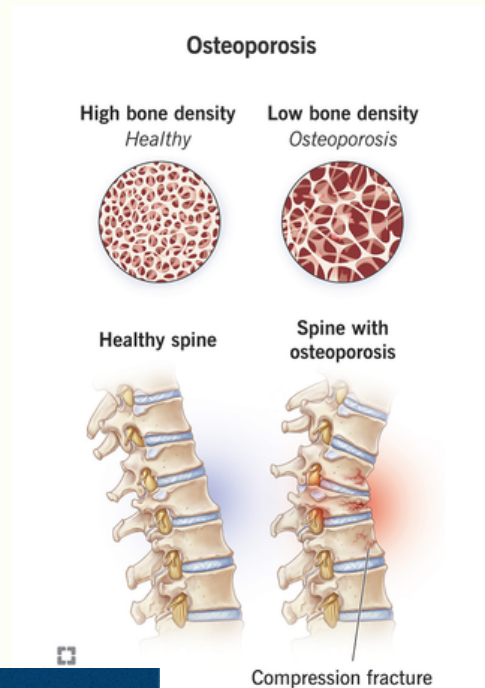
Treatment:

- Perform an extended warm up & cool down with workouts
- Consider running on softer surfaces
- Choose supportive shoes
- Assistive devices (braces, shoe inserts)
- Medication

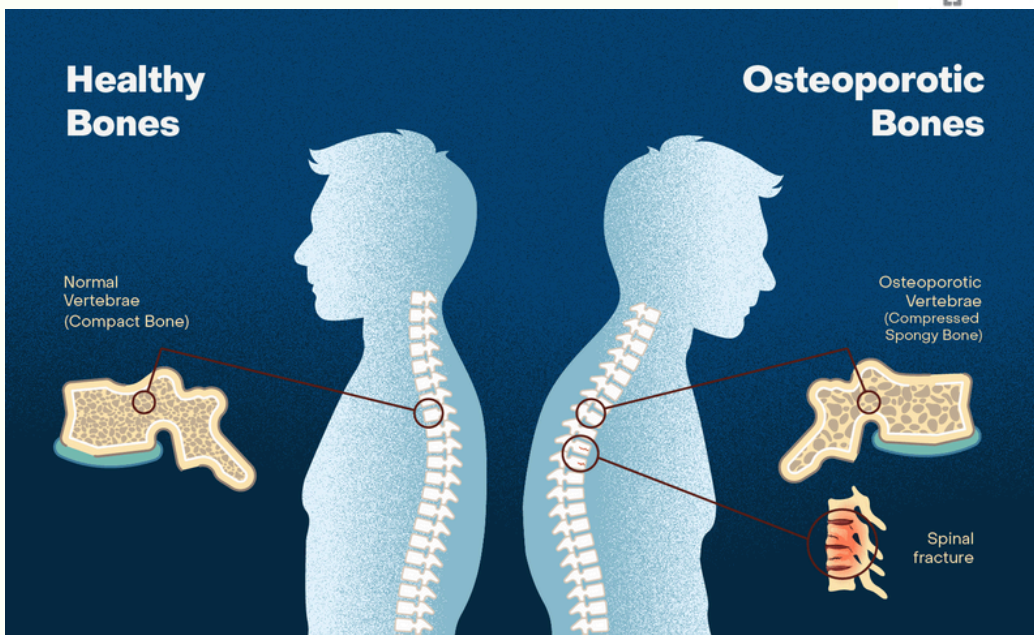
50s - the Maintaining Phase

Osteoporosis

- Decrease in bone mass and strength
 - As it advances, bone becomes more hollow and weak
- Due to an inequality between increased bone reabsorption and decreased bone formation (see images below)
- “Silent” disease - typically don’t have symptoms until a broken bone
- Postmenopausal women are at higher risk (due to reduced hormone levels)
- Symptoms:
 - Back pain
 - Slouched posture
 - Loss of height
- Prevention/Treatment:
 - Weight-bearing exercise during cardio
 - Strength training
 - Nutritious diet - calcium rich
 - Avoid smoking and excessive alcohol
 - Medications



<https://my.clevelandclinic.org/health/diseases/4443-osteoporosis>



<https://spinehealth.org/article/osteoporosis/>

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“My physician told me (in my 50s) that I needed to do weight-bearing exercise and walking/running was the easiest and most available” - Carol, 83

Training focus for 40s & 50s

01 **Be aware of the frequency of high impact & explosive movements**

- Want to maintain joints as long as possible
- Individual specific of when necessary to pull back or discontinue

02 **Large emphasis on strength training**

- Focus on strengthening large muscle groups around the joints
 - Reduces fractures and falls

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03 **Begin to integrate balance exercises regularly**

- Add 2-3 specific balance exercises into each workout routine
 - Refer to page 30

04 **Integrate a warm up and cool down for every workout**

- For strength training and cardio
- To activate muscles and decrease chance of injury

05 **Larger emphasis on flexibility after workouts**

- To maintain muscle length to coordinate with strengthening

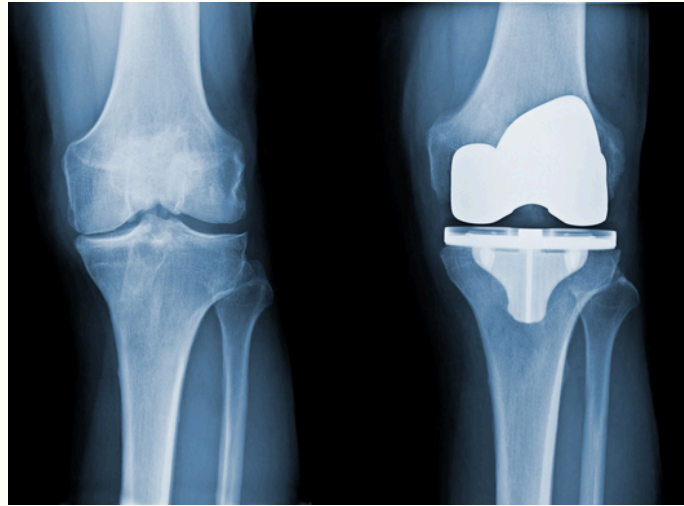
06 **For running, begin to increase recovery time**

- Integrate an extra rest day or light cardio day during the week
- Decrease length of runs

60s - the Keep Going Phase

Hip & Knee Replacements

- Replacing damaged joints with artificial implants
- Typically last 15-20 years, more beneficial to get later in life
- See knee replacement x-ray on the right
- See hip replacement image below



<https://www.popb.md/2021/09/03/tips-for-a-smooth-recovery-from-total-knee-replacement/>

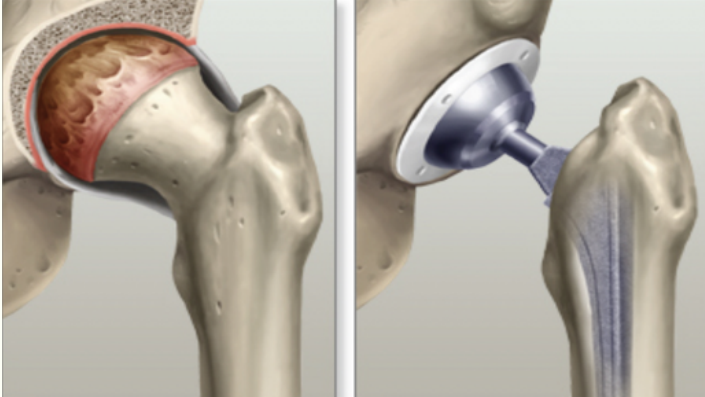
Indications:

Severe osteoarthritis

Rheumatoid arthritis - chronic inflammatory autoimmune disease

Trauma or injury

Failed consecutive surgeries



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<https://www.wtbc.com/patients/guide-total-hip/>

- Replacements allow older adults to maintain an active lifestyle, experience pain relief, and improved function
- Pre and post operative exercise has been shown to have large effects on enhancing overall recovery
- Remaining physically active after surgery is crucial to maintaining general health
- For running, dependent on the surgery for a gradual return or finding new/alternative forms of cardio

70s - the Keep Going Phase

Increasing Fall Risk (1)

- “More than 1 out of 4 older people fall each year”
- “1 out of 10 falls results in an injury restricting daily activities for a day or more”
- “Falling once doubles your chances of falling again”

Common causes of falls:

- Physical changes
 - Sarcopenia (refer to page 16)
 - Slower reaction time
 - Loss in balance
 - Gait and mobility impairments
- Medical conditions
 - Chronic diseases
 - Vision and hearing loss
- Environmental factors
 - Unsafe home environment
 - Lack of assistive devices
- Psychological factors
 - Fear of falling
 - Cognitive impairment



Preventing falls:



Make your home safer



Get your hearing & vision checked



Review your medications with your doctor



Stay active and exercise

Steps of How to Get up From a Fall:

1 Stay Calm and Assess Yourself

Take a moment to collect yourself. Breathe. Assess how your body feels and if you need help.



2 Roll to your side

Roll onto your side and rest.



3 Get on Your Hands and Knees

Push yourself up onto your hands and knees.



4 Use the Furniture for Support

Hold onto a sturdy piece of furniture.



5 Push Up slowly

Using your strongest leg, push into a standing position, then turn and sit down.



6 After You're Up

Sit and rest a moment. Tell someone that you fell.

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If you're injured or unable to get up, call for help or use a medical alert device

The easiest way to avoid falling is to stay active & prevent dangerous conditions

[Video demonstration](#)

Training focus for 60s & 70s

01 High emphasis on balance exercises in workouts

- Helps reduce chance of falls and increase overall stability

02 Maintain large muscle group strength training

- Contributes to overall functional ability

03 If still running, kinematics will begin to change

- Decrease in stride length and increase in stride frequency
- Maintain gait as much as possible
- Strength training is crucial
- Decrease length of runs

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04 Be aware of the workout surfaces being used

- If running, continue what you are doing and challenge yourself in reasonable and safe ways
- If you are just getting started, be sure to keep fall prevention in mind
- Could switch to an inside track or treadmill
- Individual specific when to change surface

05 Switch to other forms of exercise (cross training)

- Takes impact off some joints
- Elliptical or stationary bike
- If prefer seated position, recumbent bike, or Nu step

06 Consider adding aquatic exercise

- For low impact on joints
- Full body workout
- Improves cardio, strength, and flexibility
- Accessible to most people

80+ - the And Beyond phase

Overall Faster Decline

- Maintenance of independence and being able to perform activities of daily living is most important
 - Examples:
 - Get on and off the ground
 - Walking around the house
 - Reach items on shelves
 - Cooking
 - Benefits:
 - Provides a large sense of self-worth and well-being
 - Being in social situations
 - Helps increase energy and improve sleep
 - Manages chronic conditions



Training focus for 80+

01 “Motion is lotion”

- Continue doing any form of physical activity that you are able

02 Aim for a mixture of strength, cardio, flexibility, and balance

- All influence each other and will lead to more maintained mobility

03 Type of exercise & intensity might change

- If still running, keep runs short in distance to maintain good gait
- Have a variety in forms of cardio

“Aging affects your overall well-being, diverse physical features, and more emotional aspects. Exercising gives you confidence and helps you still be able to do daily activities even though they are harder” -

Patrick, 87

SHATTERING STEREOTYPES

General Exercise Myths:

1. If the scale doesn't change, I'm not making progress

- a. The scale not changing is influenced by many factors
- b. Fat & muscle percentages take time to change
- c. Cardio doesn't lead to fast body transformation
- d. We have no control of what or where fat stores burn during exercise

2. Lifting weights makes you "bulky"

- a. "Bulking" refers to intentional intense weight lifting & calorie consumption
- b. Gaining visible muscle takes consistency & weeks to months
- c. Women don't have enough testosterone to "bulk" the same way

3. If you exercise, it doesn't matter what your diet is

- a. Diet and exercise work in tandem to change physique
- b. Can't outrun a bad diet
- c. Food is fuel - proper nutrition helps with results

4. Stretching decreases injuries

- a. Hasn't been proven to decrease rates of injuries
- b. Warm up and cool down are highly recommended for gradual temperature increase of muscles
- c. Beneficial for overall flexibility

5. Crunches = 6 pack

- a. Core work helps with balance, stability, posture, & back pain
- b. Visibility is related to body fat percentage, and visibility doesn't always equal healthy
- c. Include core work into exercise routine regularly

6. No pain, no gain

- a. One should know the difference between pain, discomfort, & soreness
- b. Sweating is not a measure of intensity
- c. Can lead to overtraining and future injuries



Older Adult Exercise Myths:

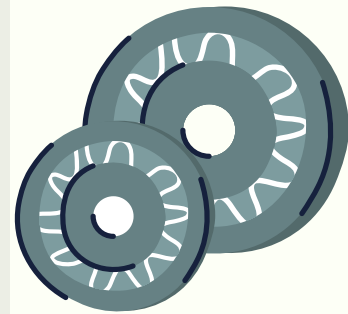


1. Avoid exercise to avoid injury

- a. More harm than good can come from not exercising
- b. Must progress exercise program correctly
- c. Helps to slow natural aging decline & maintain independence

2. Abstain from strength training

- a. Strength, balance, and flexibility training can decrease the number and risks of falls
- b. Target major muscle groups related to activities of daily living
- c. Age related decreases in muscle mass can be slowed



3. Aqua based exercise only

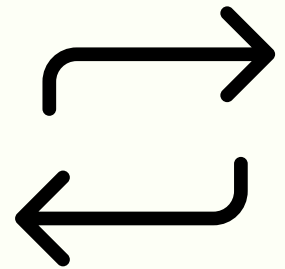
- a. Water activities should not be the sole form of activity, if possible
- b. Weight bearing exercise continues to strengthen the joints
- c. Good alternative for people with compromised function or in combination with other exercise forms



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4. Need to exercise less frequently

- a. Should aim to hit guidelines for adults (refer to page 4) or maintain activity as possible
- b. Form of exercise and intensity will naturally change
- c. Listen to your body, but any movement is good movement



5. Lack of physical ability and access to equipment

- a. Many adapted or modified options to help to still be active
- b. Many online videos & programs are available for at home convenience
- c. Can use items around the house or environment nearby



IT'S OKAY

Aging acceptance

Aging: “the accumulation of a wide variety of molecular and cellular damage over time, leading to a gradual decrease in physical and mental capacity, a growing risk of disease, and ultimately death (2)”

Ageism: stereotyping and/or discrimination against individuals or groups based on their age

- There is no “typical” older person, diversity is normal
- Examples:
 - Attributing forgetfulness to aging
 - Viewing all elderly as frail or dependent
 - Healthcare crisis because of baby boomers
 - “Anti-aging” products
 - Directing comments to the younger people present
 - Expectations of women’s physical appearance
- Instead:
 - Seek intergenerational connections
 - Avoid stereotypes
- For yourself:
 - Acknowledge inherent bias, denial is not helpful
 - Notice your reactionary behaviors
 - Pursue self reflection to learn how to respond to societal comments on aging positively

“Aging belongs to all”



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“Healthy aging is the process of maintaining good physical, mental, social health and well-being as we grow older (1)”

- Aging exists in all phases of life
- Includes adopting healthy habits and making positive lifestyle choices that contribute to overall well-being as we age

1. Centers for Disease Control and Prevention. (2024b, September 3). Healthy Aging at Any Age. Centers for Disease Control and Prevention. <https://www.cdc.gov/healthy-aging/about/index.html>

2. World Health Organization. (2024, October 1). Ageing and health. World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/ageing-and-health>

Different phases of life that influence exercise routine:

“The effects of aging and body decline are something I think about all the time because it is my life” - Ed, 50

Childhood/Adolescence:

- Physical activity is integrated into school and sports
- Exercising regularly with guided routine

College:

- New environment with flexibility of schedule
- Other things prioritized
- Exercise becomes less frequent because of accountability

Starting a job:

- Having a set schedule from 9am - 5pm limits time for exercise
- Must be motivated to prioritize before or after

Having a family:

- Focus is caring for kids
- Time to exercise is prioritized differently
- Might include more efficient & at home exercise

Continued work in middle age:

- Exercising to maintain
- Must re-establish routine

Taking care of parents:

- Focus shifts back to other people
- Easy to not prioritize yourself

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1. Centers for Disease Control and Prevention. (2024b, September 3). Healthy Aging at Any Age. Centers for Disease Control and Prevention. <https://www.cdc.gov/healthy-aging/about/index.html>

2. World Health Organization. (2024, October 1). Ageing and health. World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/ageing-and-health>

YOUR TOOLBOX

Things to remember when creating workouts:

In a workout:

- Choose 3 exercises from each of the strength training categories
- Choose 2 stretches from each of the flexibility categories
- Choose 2 exercises from the balance list

Select different exercises each workout to create variety and target all major muscle groups over several workouts.

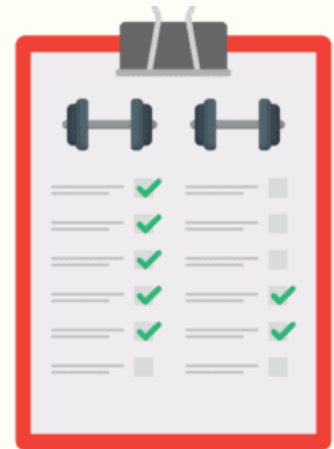
- Perform 8-12 repetitions and 2-3 sets depending on starting knowledge, consistency, and prior strength
- Take 2-3 minutes of rest between sets

Use trusted sources on the internet to assist with form for each exercise:

[Exercise form directions](#)

[How to videos](#)

[Intro to strength training](#)



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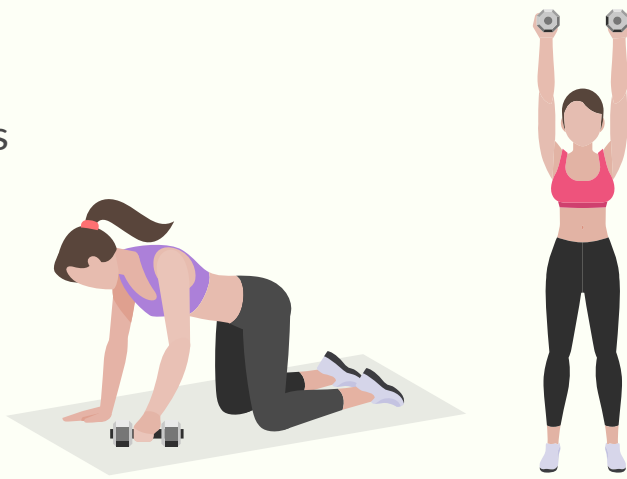
Factors to change to progress or regress:

- Increase/decrease number of repetitions, then sets
- Change type of equipment
- Increase/decrease weight
- Change position (lying to seated to standing)
- Change recovery time
 - Increase length of recovery for regression

Strength Training Exercises

Upper Body (arms, shoulders, back, and chest)

- Biceps curl
- Triceps kickback
- Overhead shoulder press
- Front & lateral raises
- Chest push ups
- Chest flies
- Bent-over rows
- Back extensions



Lower Body (quads, hamstrings, glutes, and calves)

- Squats
- Lunges
- Glute bridges
- Sit to stand
- Standing kick backs
- Calf raises
- Leg extensions
- Step ups



Core (upper, lower, and side abs)

- Dead bugs
- Bird dogs
- Seated side bends
- Russian twists
- Leg lifts
- Bicycles (elbow to knee)
- Planks
- Sit ups



Flexibility & Balance Exercises

Flexibility - Upper body

- Neck forward & backwards
- Neck side to side
- Spine rotation in chair
- Shoulder retraction squeeze
- Shoulder rolls (forward & back)
- Arm across chest
- Triceps stretch (arm over shoulder)
- Side bends



Flexibility - Lower body

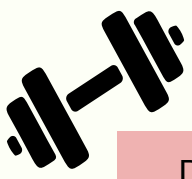
- Seated forward fold
- Side lunge stretch
- Knee to chest
- Figure four stretch
- Hamstring stretch
- Quad stretch
- Calf stretch
- Ankle circles



Balance

- Heel raises
- Standing marches
- Grapevine
- Tightrope walk (heel to toe)
- Heel to toe standing
- Side leg raises
- Single leg stand
- Single leg Romanian deadlift





WORKOUT LOG



DATE:

AM/PM:

S M T W T H F S

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	Exercise	Sets	Reps	Weight
#1 Upper body strength (UB)				
#2 UB strength				
#3 UB strength				
#1 Lower body strength (LB)				
#2 LB strength				
#3 LB strength				
#1 core				
#2 core				
#3 core				
#1 UB flexibility				
#2 UB flexibility				
#1 LB flexibility				
#2 LB flexibility				
#1 balance				
#2 balance				

TAKE HOME MESSAGES

- 1 Whether you are 8 or 80, it's never too late to start moving
- 2 Any movement is better than no movement
- 3 Gradual and consistent training is the best thing you can do
- 4 Start low, go slow (when restarting or progressing exercise)
- 5 Don't blame all setbacks & changes on aging, many factors are present
- 6 Every individual's training plan will and should look different
- 7 Everyone has their own motivation and goal with running
- 8 Too much of anything is bad
 - Have a variety in your training program
 - Types of exercise & the setting of exercise

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**THE BEST KIND OF EXERCISE IS THE TYPE YOU ENJOY THE MOST
AND WILL DO THE MOST!**

REMEMBER: IF YOU DON'T MOVE IT, YOU WILL LOSE IT!

References

- American College of Sports Medicine Position Stand. Exercise and physical activity for older adults. (1998). *Medicine and science in sports and exercise*, 30(6), 992–1008. <https://pubmed.ncbi.nlm.nih.gov/9624662/>
- Appleton, B. (1996, January 9). *Stretching and Flexibility*. STRETCHING AND FLEXIBILITY. https://web.mit.edu/tkd/stretch/stretching_toc.html#SEC28
- Ardeljan, A., & Hurezeanu, R. (2023, July 4). *Sarcopenia*. StatPearls. <https://www.ncbi.nlm.nih.gov/books/NBK560813/>
- Bailey, M. (2024, September 3). *Types of stretching - which is best for you?*. MUSC Health. <https://advance.muschealth.org/library/2024/september/types-of-stretching>
- Bayliss, L. E., Culliford, D., Monk, A. P., Glyn-Jones, S., Prieto-Alhambra, D., Judge, A., Cooper, C., Carr, A. J., Arden, N. K., Beard, D. J., & Price, A. J. (2017). The effect of patient age at intervention on risk of implant revision after total replacement of the hip or knee: a population-based cohort study. *Lancet (London, England)*, 389(10077), 1424–1430. [https://doi.org/10.1016/S0140-6736\(17\)30059-4](https://doi.org/10.1016/S0140-6736(17)30059-4)
- Braun L. T. (1991). Exercise physiology and cardiovascular fitness. *The Nursing clinics of North America*, 26(1), 135–147. <https://pubmed.ncbi.nlm.nih.gov/2000315/>
- Bushman, B. A. (2016). Flexibility Exercises and Performance. *ACSM'S Health & Fitness Journal*, 20(5), 5–9. <https://doi.org/10.1249/fit.0000000000000226>
- Cabre, H. E., Moore, S. R., Smith-Ryan, A. E., & Hackney, A. C. (2022). Relative Energy Deficiency in Sport (RED-S): Scientific, Clinical, and Practical Implications for the Female Athlete. *Deutsche Zeitschrift fur Sportmedizin*, 73(7), 225–234. <https://doi.org/10.5960/dzsm.2022.546>
- Centers for Disease Control and Prevention. (2024, May 9). *Facts About Falls*. Centers for Disease Control and Prevention. <https://www.cdc.gov/falls/data-research/facts-stats/index.html#:~:text=Each%20year%2C%20millions%20of%20older,Difficulties%20with%20walking%20and%20balance>
- Centers for Disease Control and Prevention. (2024, September 3). *Healthy Aging at Any Age*. Centers for Disease Control and Prevention. <https://www.cdc.gov/healthy-aging/about/index.html>
- Chilibeck, P. D., Sale, D. G., & Webber, C. E. (1995). Exercise and bone mineral density. *Sports medicine (Auckland, N.Z.)*, 19(2), 103–122. <https://doi.org/10.2165/00007256-199519020-00003>
- Coates, P. (2014, August 26). *How to train through niggles*. The Sydney Morning Herald. <https://www.smh.com.au/lifestyle/how-to-train-through-niggles-20140826-108f7s.html>
- Davis, S. (2020, April 29). *7 upper body exercises to do at home*. Warwick.ac.uk. <https://warwick.ac.uk/services/sport/blog/feed/upper-body-exercises-to-do-at-home/>
- Dhillon, J., Kraeutler, M. J., Belk, J. W., Scillia, A. J., McCarty, E. C., Ansah-Twum, J. K., & McCulloch, P. C. (2023). Effects of Running on the Development of Knee Osteoarthritis: An Updated Systematic Review at Short-Term Follow-up. *Orthopaedic journal of sports medicine*, 11(3), 23259671231152900. <https://doi.org/10.1177/23259671231152900>
- Falls and fractures in older adults: Causes and prevention*. (2022, September 12). National Institute on Aging. <https://www.nia.nih.gov/health/falls-and-falls-prevention/falls-and-fractures-older-adults-causes-and-prevention>
- Gilbert SF. *Developmental Biology*. 6th edition. Sunderland (MA): Sinauer Associates; 2000. Osteogenesis: The Development of Bones. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK10056/>
- Iversen, V. M., Norum, M., Schoenfeld, B. J., & Fimland, M. S. (2021). No Time to Lift? Designing Time-Efficient Training Programs for Strength and Hypertrophy: A Narrative Review. *Sports medicine (Auckland, N.Z.)*, 51(10), 2079–2095. <https://doi.org/10.1007/s40279-021-01490-1>
- Jette, A. M., Lachman, M., Giorgetti, M. M., Assmann, S. F., Harris, B. A., Levenson, C., Wernick, M., & Krebs, D. (1999). Exercise--it's never too late: the strong-for-life program. *American journal of public health*, 89(1), 66–72. <https://doi.org/10.2105/ajph.89.1.66>
- Lowndes, J., Carpenter, R. L., Zoeller, R. F., Seip, R. L., Moyna, N. M., Price, T. B., Clarkson, P. M., Gordon, P. M., Pescatello, L. S., Visich, P. S., Devaney, J. M., Gordish-Dressman, H., Hoffman, E. P., Thompson, P. D., & Angelopoulos, T. J. (2009). Association of age with muscle size and strength before and after short-term resistance training in young adults. *Journal of strength and conditioning research*, 23(7), 1915–1920. <https://doi.org/10.1519/JSC.0b013e3181b94b35>

Martin, C. (2023, May 12). *Busting Eight Myths about Exercise and Aging*. OhioHealth. <https://blog.ohiohealth.com/busting-eight-myths-about-exercise-and-aging/>

Mayo Clinic Staff. (2025, April 8). *Osteoarthritis*. Mayo Clinic; Mayo Clinic. <https://www.mayoclinic.org/diseases-conditions/osteoarthritis/symptoms-causes/syc-20351925>

McDermott, A. Y., & Mernitz, H. (2006). Exercise and older patients: prescribing guidelines. *American family physician*, 74(3), 437–444. <https://pubmed.ncbi.nlm.nih.gov/16913163/>

Nystoriak, M. A., & Bhatnagar, A. (2018). Cardiovascular Effects and Benefits of Exercise. *Frontiers in cardiovascular medicine*, 5, 135. <https://doi.org/10.3389/fcvm.2018.00135>

Olson, R., Piercy, K., Troiano, R., Ballard, R., Fulton, J., & Galuska, D. (2018). *Physical Activity Guidelines for Americans 2nd edition*. Office of Disease Prevention and Health Promotion. https://odphp.health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf

Ory, M., Kinney Hoffman, M., Hawkins, M., Sanner, B., & Mockenhaupt, R. (2003). Challenging aging stereotypes: strategies for creating a more active society. *American journal of preventive medicine*, 25(3 Suppl 2), 164–171. [https://doi.org/10.1016/s0749-3797\(03\)00181-8](https://doi.org/10.1016/s0749-3797(03)00181-8)

Osteoporosis. (2022, December). National Institute of Arthritis and Musculoskeletal and Skin Diseases. <https://www.niams.nih.gov/health-topics/osteoporosis>

Patel, H., Alkhawam, H., Madanieh, R., Shah, N., Kosmas, C. E., & Vittorio, T. J. (2017). Aerobic vs anaerobic exercise training effects on the cardiovascular system. *World journal of cardiology*, 9(2), 134–138. <https://doi.org/10.4330/wjc.v9.i2.134>

PHED 1010 - Concepts of Fitness and Wellness: Flexibility. Libraries Georgia Highlands College. (2024, December 12). <https://getlibraryhelp.highlands.edu/c.php?g=577032&p=4224840>

Qiu, Y., Fernández-García, B., Lehmann, H. I., Li, G., Kroemer, G., López-Otín, C., & Xiao, J. (2023). Exercise sustains the hallmarks of health. *Journal of sport and health science*, 12(1), 8–35. <https://doi.org/10.1016/j.jshs.2022.10.003>

Relative Energy Deficiency in Sport (REDs). Boston Children's Hospital. (n.d.). [https://www.childrenshospital.org/conditions/reds#:~:text=Relative%20energy%20deficiency%20in%20sport%20\(REDs\)%20describes%20a%20syndrome%20of,any%20gender%20and%20ability%20level](https://www.childrenshospital.org/conditions/reds#:~:text=Relative%20energy%20deficiency%20in%20sport%20(REDs)%20describes%20a%20syndrome%20of,any%20gender%20and%20ability%20level)

Sell, K., & Frierman, S. (2010). *Debunking the Myths Surrounding Exercise and Older Individuals*. Hofstra University. https://www.hofstra.edu/pdf/community/culctr/culctr_events_healthcare0310_%20sell_paper.pdf

Shephard R. J. (1993). Exercise and aging: extending independence in older adults. *Geriatrics*, 48(5), 61–64. <https://pubmed.ncbi.nlm.nih.gov/8486296/>

Stinchcombe, C. (2024, June 24). *Aerobic vs. Anaerobic Exercise: Which Benefits You More?* (S. Sinha, Ed.). Goodrx. <https://www.goodrx.com/well-being/movement-exercise/aerobic-vs-anaerobic-exercise>

Walston J. D. (2012). Sarcopenia in older adults. *Current opinion in rheumatology*, 24(6), 623–627. <https://doi.org/10.1097/BOR.0b013e328358d59b>

Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: the evidence. *CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne*, 174(6), 801–809. <https://doi.org/10.1503/cmaj.051351>

World Health Organization. (2024, October 1). *Ageing and health*. World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/ageing-and-health>

Yeager, S. (2019, September 17). *This Decade-by-Decade Training Guide Will Help You Run 5* *trong at Any Age*. Runner's World. <https://www.runnersworld.com/training/a28691136/aging-runners/>

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