



# **“Rehabilitation for an Active Lifestyle after Hip or Knee Arthroplasty”**



# Introduction

- Physical inactivity plays a significant role in the development of chronic disease and premature death.



# Introduction

- Regular physical activity is effective in the prevention of several chronic diseases:
- Cardiovascular disease, diabetes, cancer, hypertension, obesity, depression, osteoporosis and premature death



# Introduction

- There is a linear relationship between physical activity and health status, as further increases in physical activity and fitness will lead to additional improvements in overall health.

# Introduction

- The Primary Objective of hip and knee arthroplasty is to improve the patients quality of life by improving function and alleviating pain.

# Introduction

- Pain relief is a big deal but it's not the only thing!
- Survey of patients prior to joint arthroplasty and the primary reason for having the surgery
- About 80% stated relief of pain
- About 20% stated wanting to return to sport

# Introduction

- Joint arthroplasty should not inhibit patients from resuming activity and sport.

# Introduction

- Physical fitness: A physiologic state of well-being that allows one to meet the demands of daily living or that provides the basis for sport performance, or both!



# Introduction

- The challenge of Medicare
- Medicare Guidelines
- ADL inside the home
- Limited funds available

# Science

- Joint loads at the hip and knee with ADL and sport activity.
- During ADL loads of 1 to 4 x body weight occur
- During high level impact and sport, loads of 5 to 10 x body weight occur

# Science

- The moments and joint loads on the hip and knee during most endurance (aerobic) activity such as walking, hiking, jogging, strongly depend on the speed.
- The faster the walk or run the higher the loads

# Science

- Joint loads are affected by the type of activity, technique, experience and body weight.

# Science

- Design differences between Hip and Knee prosthesis
- Many TKA designs will show much smaller stress levels near extension as compared to flexion angles of 40 to 60+ degrees for the same load
- With the THA ball and socket design knee flexion angles do not affect the load distribution at the hip

# Science

- Based on the design differences between hip and knee prosthesis it is prudent to be more conservative after TKA than after THA for activities that produce higher joint loads in higher knee flexion angles (mountain hiking)

# Predictive Factors

- Patient specific factors predict post-operative activity levels rather than factors specific to type of surgery, implant, or surgeon factors

# Predictive Factors

- Factors that predict post-operative activity
- Pre-operative activity level
- Age
- BMI



# Recommended Activities

- Survey results of the American Association of Hip and Knee Surgeons as well as European orthopedic surgeons

# Recommended Activities

- Low impact activity that is allowed and recommended!!
- water aerobics, swimming, walking, speed walking, hiking, dancing, bicycling, bowling, and golf

# Recommended Activities

- Intermediate impact activities allowed with experience!!
- aerobics, canoeing, cross country skiing, ice skating, horseback riding, table tennis, doubles tennis (pickle ball), sailing, yoga, Tai Chi, rowing, and weight lifting

# Recommended Activities

- High impact/Contact sport activity **NOT** allowed
- football, basketball, baseball/softball, soccer, volleyball, and jogging

# Recommended Activities

- Physical activity recommendations for healthy adults age 18-65+ according to the American College of Sports Medicine and the American Heart Association

# Recommended Activities

- Perform moderate intensity aerobic physical activity 30 minutes or more at least 5 days a week.
- Perform vigorous intensity aerobic physical activity for a minimum of 20 minutes 3 days a week

# Physical Therapy

- Persistence of post-operative functional impairments and strength deficits following arthroplasty

# Physical Therapy

- Comparing Pre-operative quadriceps strength to Post-operative strength
- The strength differences do not approach the Pre-op levels until 6 months after surgery



# Physical Therapy

- Comparing Post-op arthroplasty patients strength to healthy age matched subjects
- TKA patients 1.7 years after surgery had 35% strength deficits compared to age matched healthy people

# Physical Therapy

- Gait speed and stair climbing speed were significantly slower as well
- 15% to 50% slower for TKA patients 6 months to 1 year after surgery

# Physical Therapy

- These findings suggest a need for more intensive rehabilitation in the **subacute** recovery period after arthroplasty to optimize functional outcomes in the first year after surgery

# Physical Therapy

- First 2 months following hip and knee arthroplasty
- Protection and follow standard precautions
- Control Swelling
- Regain Range of Motion
- Walk as normal as possible
- Develop Functional Strength

# Physical Therapy

- Top – Down assessment and exercise
- Bottom – Up assessment and exercise
- Whole Body Approach and Regional Interdependence

# Physical Therapy

- We move in 3 Planes of motion and want to train in all of them
- Functional Progression and increasing intensity in subacute phases of treatment
- Circuit Training
- Dual Task

# Physical Therapy





# Physical Therapy

- Assess Don't Guess!
- Sit to Stand Test
- Shuttle Leg Press Test
- Star Excursion Test
- Stair Climb and Descend Test
- TUG
- 6 Minute Walk



# Counseling

- Based on evidence and opinion it is recommended that following arthroplasty patients should wait at least 4 to 6 months after surgery to resume desired physical activity

# Counseling

- Risks of injury and Failure of arthroplasty
- Injuring other body parts
- Dislocations
- Fractures
- Aseptic loosening
- Wearing of components

# Counseling

- Sensible participation in low to moderate impact activities after a hip or knee replacement is allowed and encouraged but, high impact sports should be avoided.

# Conclusion

- Changes in technology and design, materials, surgical advances (robot assisted), and rehabilitation all may lead to the possibility of returning to higher levels of activity for all patients following joint arthroplasty.



# Conclusion

THANK YOU!!

# References

- Kuster, M. Sports Medicine Feb. 2002
- Meira, E. and Zeni, J. IJSPT Nov. 2014
- Stevens, M. et al Clin Geriatr Med 2012
- Williams, D. et al Clin Orthop Relat Res 2012
- Bade, M. et al JOSPT Sept. 2010
- Meier, W. et al JOSPT May 2008
- Moffet, H. et al Arch Phys Med Rehabil April 2004
- Klein, G. et al Journal of Arthroplasty 2007
- Bloomfield, M. and Hozack, W. Sports Health Jan/Feb 2014



