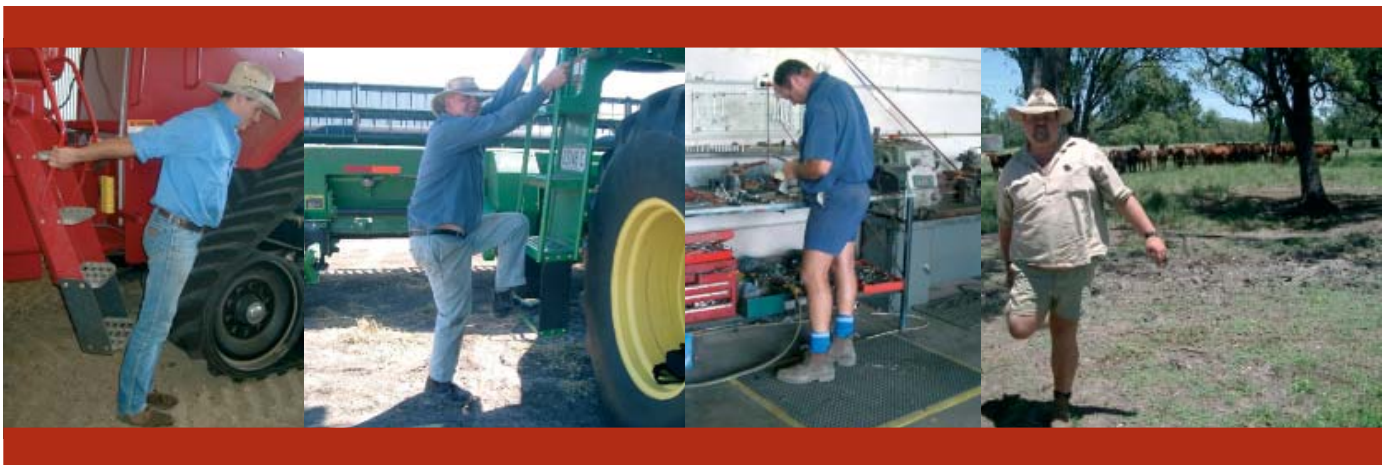
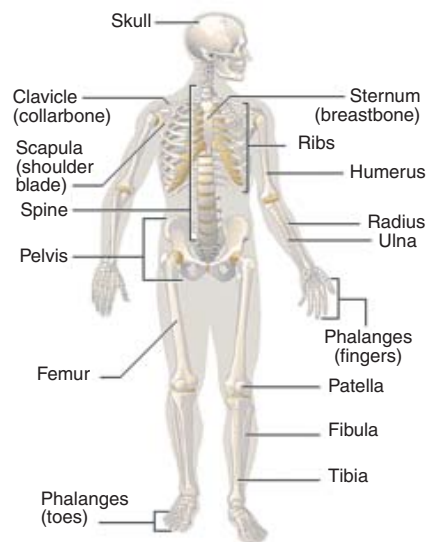


Osteoarthritis in Farming People

A PRACTICAL RESOURCE



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How To Use This Document ---

1. Read general information on osteoarthritis Page 3

2. Go to the section relevant to your form of osteoarthritis

Neck and Lower Back	Page 6
Hip	Page 12
Knee	Page 15
Foot	Page 18
Shoulder	Page 21
Fingers and Wrist	Page 24

3. For more information see

Useful Websites	Page 28
Resources Available	Page 29
References	Page 29

Acknowledgments

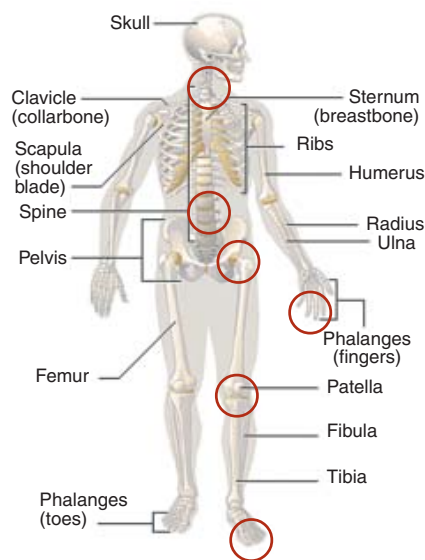
The steering committee would like to acknowledge all those who have assisted throughout the project in particular the participants in the group discussions for their help in the development of this material. Their interest and support was much appreciated and contributed significantly to the overall quality of the project.

Special mention must be given to the 10 farmers who have participated in the project by agreeing to be photographed doing stretches and exercises. *Sincere Thanks.*

Osteoarthritis

The purpose of this Guidance Note is to provide information on the management and prevention of osteoarthritis, particularly to farming men and women. The information is in no way intended to replace the advice given by your treating medical practitioner or your health care professional. These are suggestions only, please talk with your doctor or health care professional before undertaking any of the suggested exercises. Should these exercises aggravate an existing condition stop and seek medical advice or contact your local health professional.

THE HUMAN BODY¹⁰



What is Osteoarthritis?

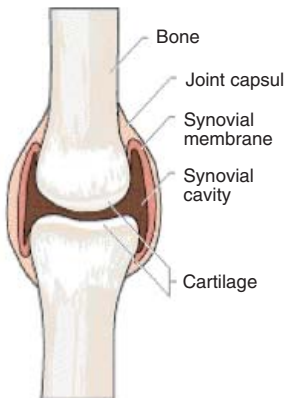
Osteoarthritis is a progressive disorder of the joints caused by gradual loss of cartilage resulting in the development of bony spurs at the margins of the joints. Osteoarthritis is also known as degenerative joint disease⁵ and is a common part of aging. As one ages one can expect to be more aware of pain in the joints, however the symptoms of osteoarthritis can be worsened by recurrent injuries¹⁹.

Osteoarthritis primarily affects the major weight bearing joints such as the hips, knees, feet (including the big toe) and spine, with the hands being the other primarily affected area of the body⁵.

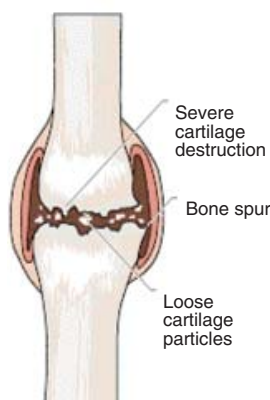
Symptoms of Osteoarthritis⁶

- Painful joints, that worsen with exercise or repetitive use.
- Swelling of the affected joints.
- Creaking, pain and stiffness which restricts movement.
- Weakened muscles surrounding the affected joint.
- Joint deformity.

NORMAL JOINT



OSTEOARTHRITIS



Source: Arthritis Foundation

To reduce pain, people with osteoarthritis may favor affected joints, holding them in a fixed position. This causes the muscles surrounding the joints to stiffen and weaken and the tendons, which attach muscles to bone or to other muscles, to tighten. As a result, joints may contract or change shape and patients may eventually lose mobility⁴. This can cause the joint to be pulled off centre in turn exacerbating the problem by having uneven wear of the joint. By strengthening the muscles around the joint the joint can be brought back into line and pain can be reduced.

While there is no cure for this progressive disorder evidence from a number of studies shows that some exercise of the muscles surrounding joints effected by osteoarthritis is beneficial^{5,1,2,3}. While some studies suggest there is initial pain in the effected joint, in the time following the exercise, pain decreased to be less than the reported initial pain.

There is no evidence that favors one type of exercise therapy program over another¹. Aerobic and weight training programs were designed over a specified period and both reported improvements in joint mobility and decrease in pain.

While these studies focus primarily on major weight bearing joints such as the hips and knees, these results can loosely be extrapolated to other effected joints, as the same principles apply.

To do nothing, can lead to a deterioration in the joint and exacerbate the symptoms associated with osteoarthritis. In addition to use the effected joint without having first strengthened the muscles surrounding the joint can lead to increase in damage to the joint.

Osteoarthritis

Treatment & Management

Something can be done!! The recommendation is that some exercise, even moderate home exercises are beneficial and should be regularly undertaken as part of a self management program in order to maintain muscle strength, joint mobility and allow work to continue comfortably^{18,21}.

Most successful treatment programs involve a combination of treatments tailored to the patient's needs, lifestyle, and health. Osteoarthritis treatment has four general goals:

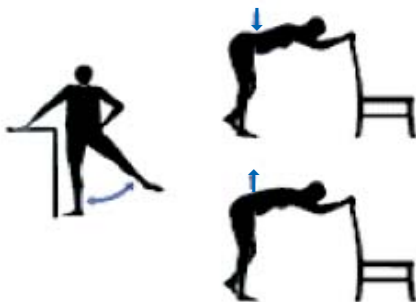
- ✓ **Improve joint care** through exercise and rest.
- ✓ **Maintain an acceptable body weight.**
- ✓ **Achieve a healthy lifestyle.**
- ✓ **Control pain** with medicine and other measures.



STRENGTHENING



AEROBICS / HEART & LUNG HEALTH



RANGE OF MOTION

1. Joint Care & Exercise

Low impact, regular exercise is very important in maintaining muscle strength and joint mobility. People with osteoarthritis are encouraged to exercise as a way of keeping the joint cartilage lubricated. Exercises which increase balance, flexibility and range of motion are recommended. Stretching and hot showers before exercise and applying ice packs to muscles and joints after exercise minimize discomfort related to exercise⁴.

A variety of exercises are best, for example **strength exercises**, such as lifting light weights or using an exercise machine builds muscle throughout the body. **Aerobic activities** increase your breathing and heart rate, these keep your lungs and circulation systems in shape. One of the best forms of exercise for people with arthritis is swimming, an activity that uses muscles with minimal joint strain. **Range of motion activities** such as stretching exercises will keep the joints free moving and keep an adequate blood flow to the joint surfaces, which is important to keep the joint lubricated and free moving.

Rest is another crucial element of arthritis treatment⁴. It is important to have regular rest breaks, this allows different muscle groups to be relieved and stretched. This is particularly important if you are in the same position for extended periods of time, such as tractor driving.

2. Maintain an Acceptable Body Weight

It is recommended that a healthy well balanced diet be followed to control body weight. Excessive body weight increases the force on the weight bearing joints, which may exacerbate the symptoms of osteoarthritis.

3. Healthy Lifestyle⁸

- a. Participate in physical activity regularly. Find ways of fitting physical activity into your life that suit you - walk, cycle, dance, swim, play sport and enjoy the health benefits of physical activity. Being active with a friend is more enjoyable and means you are more likely to do it.
- b. Eat well - fresh vegetables and fruit as part of a balanced diet are essential for your body.
- c. Be social - talking and mixing with others is a great way to remain healthy emotionally and socially. Spend time with your family and friends.
- d. If you choose to drink alcohol, drink in moderation and make sure you understand the short and long term effects of drinking alcohol on your health.
- e. Don't smoke - there is no doubt that smoking kills. Quitting smoking has health benefits at any age.
- f. Keep stress under control - we all have stresses in our lives, and knowing how to keep stress at a manageable level means a healthier lifestyle.

Osteoarthritis

4. Pain Control

Medication can relieve pain caused by osteoarthritis. Paracetamol can be used to manage pain with little or no harmful side effects on the stomach.

Aspirin and medications known as Non Steroidal Anti Inflammatory drugs (NSAIDs) can be used to treat inflammation and pain. Individual reactions to these medications vary, but irritation of the stomach is the most frequent side effect. Consult your doctor before taking any non-prescription medication, some medications may cause adverse reactions to those with asthma. Take all medication as directed.

Natural Therapies and Products.

It has been suggested that some foods may help to alleviate the symptoms of osteoarthritis, such as omega 3 fish oils. These oils are found in fish such as mullet, trevally, flathead, snook, salmon and sardines. An increase in intake of these oils can help to reduce pain and discomfort associated with an inflammation of the joint, however there is no evidence to suggest diet alone can cure osteoarthritis.⁷

Other over the counter products are available which have also been suggested to reduce pain and alleviate some of the symptoms of osteoarthritis. Some of these product names include; Goanna Oil™ and Goanna Liniment™, Osteo Eze™, Arthritic Terminator™, Arthro-Aid Direct™, A little bit of relief™, Medi-rub™.

Glucosamine is an amino sugar produced from the shells of shellfish and is a key compound found in cartilage. The human body is able to produce some glucosamine, however as the body ages it is unable to produce sufficient amounts, causing cartilage to harden resulting in bony spurs, joint deformity and limited joint movement. These conditions can lead to the development of osteoarthritis. Studies have shown that supplementing the diet with glucosamine can improve deteriorated cartilage, as well as reduce pain caused by osteoarthritis⁹.

Working on the Farm with Osteoarthritis

Some solutions to pain and discomfort caused by osteoarthritis.....

Many farmers are continuing to work with the pain of osteoarthritis. They have been able to do this by observing a few basic principles and planning their work to accommodate their condition.

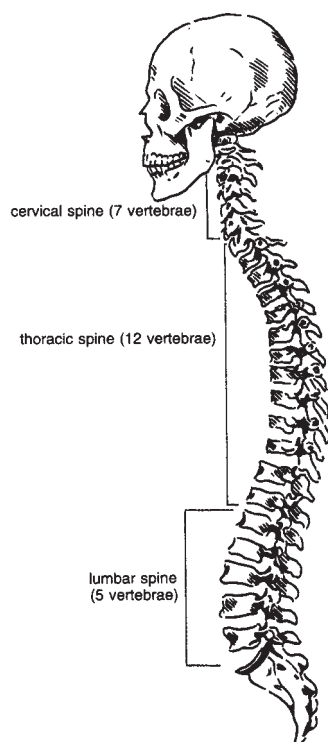
Guidelines to reduce stress on joints and muscles.....

1. Avoid any kind of bent or unnatural positions, for example overhead work, where elbows are above the shoulders, or extreme reaching below and behind the body. Bending the trunk or the head sideways is more stressful than bending forward. Maximum rotation of the body should be no more than 45 degrees.
2. Avoid keeping an arm outstretched either forward or sideways. Such postures not only lead to rapid fatigue, but also markedly reduce the precision and general level of skill of the hands and arms.
3. Work sitting down as much as possible.
4. Rearranged the workshop so that the commonly used tools and materials are in easy reach, to avoid lifting from below the knees or above the shoulders.
5. Adjust the height of the workbench to keep the elbows at 90 degrees and close to the body.
6. Keep the wrists in a neutral position where ever possible, if not try to work with the palms down.
7. Avoid fatiguing postures, except for infrequent, short durations.
8. Change postures frequently and use support where possible.

By avoiding awkward postures the risk of exacerbating an existing injury, or causing pain to an effected joint can be dramatically reduced.

Osteoarthritis of the Neck & Lower Back_____

Back pain in the farming population is not uncommon!! However there are a number of things that can be done to reduce the risk of developing lower back pain as well as alleviating existing pain and discomfort.



Anatomy of the Spine²²

The backbone or spine is made up of 26 separate bones or vertebrae.

The first of the seven cervical or neck vertebrae (C1), is called the “atlas,” this holds the globe of the skull. Your second (C2), the “axis,” permits head turning and tilting. Your 12 thoracic (mid-back) vertebrae (T1 - T12) all connect to the ribs in the back and all but two (T11 & T12, which “float”) join the sternum (breastbone). Your five lumbar (lower back) vertebrae are the biggest, thickest and most massive vertebrae. They support the weight of your entire spine, which is why so many spinal problems are in the lower back. Your sacrum is made up of five fused vertebrae. The sacrum and the hips on either side make up your pelvis. Your coccyx, four fused vertebrae, is commonly called the tailbone¹⁰.

Movement between the discs is possible by a pair of flat joints and by a flat gristly disc. This fluid containing disc is able to absorb jolts between the vertebrae at the same time allowing movement.

Pain often occurs when the muscles surrounding the joints are too strong or too weak; or too short or too long. This results in a muscle imbalance causing the discs to not sit squarely on each other resulting in uneven wear¹¹.

Early Intervention and Management

If you are experiencing back pain, now is the time to act! Something can be done – you don’t have to live and work with pain. There are a number of practical things which can be done on the farm and in the farm work environment which can help to reduce pain.

Rest - It is important to have regular breaks, this allows different muscle groups to be relieved and stretched. This is particularly important if you are in the same position for extended periods of time, such as tractor driving.

Neck and Back Stretching Exercises

Stretching can offer immediate relief to aching and painful muscles. These exercises are designed to stretch the muscles in your neck and back, and can help keep your neck and spine strong and flexible. As muscle strength improves the number and intensity of stretches can be increased.

If pain is experienced - STOP. If mild discomfort occurs after the stretch then decrease the number and the intensity of the stretches. If your body is not use to being stretched often the muscles around the joints may be very tight, with regular and consistent stretching the muscles will loosen and be more free moving.

Osteoarthritis of the Neck & Lower Back

Neck & Back Stretching Exercises

Neck Turn

- Tuck your chin in, keeping your eyes level.
- Rotate your head so that you are looking over your shoulder.
- Hold for 5. Return to start. Do 8 times. Switch sides.



Neck Tilt

- With shoulders relaxed, tuck your chin in slightly.
- Tilt your head so that your ear is over your shoulder.
- Hold for 5. Return to start. Do 8 times. Switch sides.



Pectoralis Stretch

- Pull your shoulder blade down and in.
- Rotate the body away from the arm being stretched.
- Hold for 5. Switch sides and repeat frequently.



Shoulder and Hamstring Stretch

- Place both hands on a sturdy surface at hip height.
- Lean back and pull the shoulder blades together.
- Bend the knees and pull your tail bone up as high as possible into the air.



Full Back Release

- Relaxing your neck, curl down slowly.
- “Hang” for a count of 5 and curl up slowly.
- Tighten your abdominals and use your back muscles.
- Bring your head up. Return to the start and repeat.



Osteoarthritis of the Neck & Lower Back

Neck & Back Strengthening Exercises

Wall Slide Starting Position

- Stand with your hips and buttocks slightly tucked under and your shoulders relaxed.
- Your feet should be slightly apart and directly under your hips.
- Keep your eyes and chin level, focus directly in front of you.
- Use your stomach and buttock muscles to do a slight pelvic tilt.
- Standing, feel all three curves of your spine balanced in neutral.



Wall Slide

- With your back against the wall, with knees in line with your second toe, feet approximately 15cms from the wall, sink straight down slowly as if sitting in a chair.
- Be sure not to lose your neutral curves.
- Hold for 5 seconds, slowly slide back up.
- Repeat 5 times, 1-3 times a day. As you get stronger, try to hold for 1 minute.



Never Jump From Machinery

Jumping from machinery significantly increases the risk of injury. The shock travels through the joints of the feet, to the knees, hips and even the lower back, causing joint damage and muscle injury. In addition, the risk of injury is increased if the ground surface is uneven causing joints to twist and in some cases fractures result.



Job / Task Modifications

Where assistive equipment is not available better lifting/carrying techniques must be employed.

Golden Rules of Lifting

1. PUSH, Do Not Pull.
2. MOVE YOURSELF, Do Not Reach.
3. SQUAT, Do Not Bend.
4. TURN YOUR BODY USING YOUR FEET, Do Not Twist.
5. No Lifting Below the Knees or above the Shoulders.

On the following page are some examples of how to lift in the correct manner. *The principle behind lifting is to use the larger muscle groups, such as the buttocks and thigh muscles rather than the back.* The more you are able to keep the back straight the less risk there is of injury, or uneven wear and tear on the vertebrae.

Osteoarthritis of the Neck & Lower Back

Correct Lifting Techniques

Lifting Heavy and Awkward Objects

- Always hold the object close to the body.
- Keep a slight bend in the knees, this brings you closer to the object, as well as making you use the thigh and buttocks muscles to lift.
- Where possible always have the object elevated off the ground and as close as possible to where it needs to be.

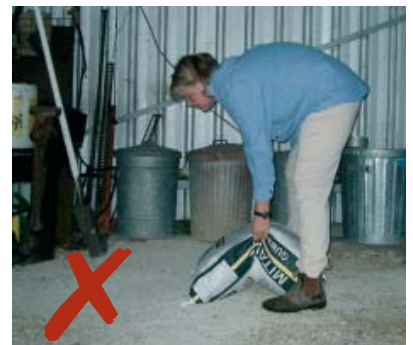


Carrying Heavy and Awkward Objects

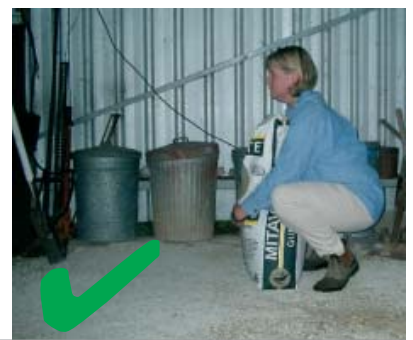
- Keep the load close to the body.
- Leaning slightly backwards allows the force of the load to be carried through the hips, knees and feet evenly.



- **Never** lift with the back.
- Muscles holding the spine in place do not and can not lift directly up.



- Start in the squat position - the load can be lifted directly up using the larger muscle groups.
- Place the feet as close as possible to the load.
- Move your feet to where the load needs to go.
- **Never twist** while carrying the load.



Split the Load

- Rather than carrying the 20kg bag, open it and take smaller loads of a more manageable weight.
- This may be more time consuming, however it may save you from back pain at the end of the day.



Osteoarthritis of the Neck & Lower Back

Looking at tasks with fresh eyes...

Pain can be reduced by rearranging the way everyday tasks are performed and in some cases pain can be eliminated. One technique to do this is to use trigger words¹². These are a series of words that may help to look at things differently. For example if the job is to move something heavy, rather than '**lift and carry**' other words can be used:- sling, glide, push, pull, slide, roll, drag and slip. Now we can look at the task with fresh eyes, perhaps pushing can be done with a tractor and bucket, a hydraulic ram, or a group of people; or pulling can be done with a rope, cable and winch; perhaps swinging can be done with a hoist.

Where assistive equipment is not available better lifting/carrying techniques must be employed.

Assistive Equipment

Wearing **gloves** means a better grasp and firmer lift can be achieved. **Hay hooks** help to extend the reach allowing the load to be carried closer to the body. A **polythene pipe handle** made by splitting a piece of lengthways and slipping it over the strings of a bale of hay, allows a cleaner, firmer, more comfortable, safer lift as pain from the strings cutting into the hands is avoided.

Footwear is a vital part of back care in the workplace. The Physiotherapy Association recommend footwear with comfortable well supporting innersoles be worn in the workplace. It is suggested that wearing the correct fitting footwear may also help to reduce pain in the feet, knees, and hips, as the force is absorbed at ground level rather than reverberating up the body through the weight bearing joints to the back.

Additional Hand Rails

If there aren't already adequate hand rails on the machinery – weld some on. By using hand rails the pressure of lifting the body is taken from the hips, knees and feet to be shared with the upper body.



Additional Steps

By adding an extra step to the base of the existing steps the strain placed on the back from the first step is reduced.

For more information see the *Safe Tractor Access* Guidance Note¹³ available from the Australian Centre for Agricultural Health and Safety.



Osteoarthritis of the Neck & Lower Back



Auxiliary Handle

- The body works best, and has more strength in an upright position.
- The auxiliary handle can be attached anyway along the handle of hand and garden tools. Making it easier for short and tall people to use.
- Pulling the handle up for each strike is less stressful on the back.



There are lots of pieces of assistive equipment found commonly in workshops or around the farm. Step ladders, bag trolleys and little trailers or wheel barrows can be used to dramatically reduce the risk of back injury.



Hoist, winches and cranes

This man is able to lift a tonne of steel onto the back of his ute without lifting more than his finger.

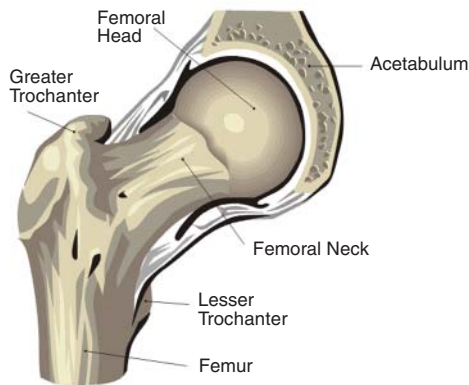


Osteoarthritis of the Hip

There are many things that can be done to alleviate the pain of osteoarthritis in the lower limbs. Strengthening the muscles around the joint is one way in which pain and discomfort can be relieved.

Each lower limb has 31 bones: 1 in hip (one side of pelvis), 4 in leg, 7 in ankle, 19 in foot and toes¹⁰.

THE HIP JOINT¹⁰



Early Intervention and Management

People with osteoarthritis of the hip should participate in a variety of different exercises for maximum benefit to the body.

Swimming is an excellent form of exercise for those with hip pain. Swimming relieves the loaded pressure on the joint and increases the range of movement. When the water is warm the heat increases the circulation and therefore improves blood flow and joint flexibility.

Why not inquire at your local pool and make arrangements to swim even if it's only once or twice a week.

Some people may benefit from joint replacement surgery. Please talk with your doctor about options for you.

Hip Stretching Exercises

Quadriceps Stretch

- Reach behind with your right hand and grab the top of your right foot.
- Slowly pull the right foot directly towards your right buttocks.
- Slowly move your hips forward until you feel a stretch in the front of your bent leg.
- Keep your knees together.
- Find a slight stretch and hold for 15 – 30 seconds.
- At first this stretch may be a little hard to do, but persevere.



Calf Muscle Stretch

- Keeping knees in line with the second toe.
- Bend your front leg.
- Keeping the heel of your back foot firmly on the ground.
- Slowly move your hips forward until you feel a stretch in the calf of your straight leg.
- Be sure to keep the heel of the foot of the straight leg on the ground and your toes pointed straight ahead.
- Hold an easy stretch for 30 seconds – do not bounce. Stretch both legs.



Osteoarthritis of the Hip

Hip Stretching Exercises

Hamstring Stretch

- Keep knee over the second toe.
- Pull the ankle and toe back towards your body, not pointed.
- Keep the back straight
- Lean forward from the hips.
- Hold for 10 seconds, repeat both legs.



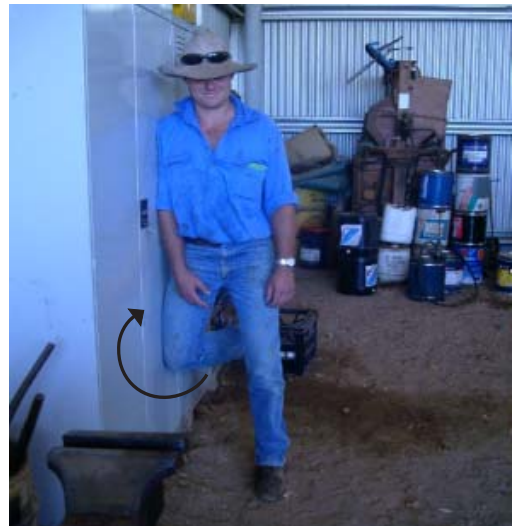
- Place one leg on a solid surface above knee height.
- Keeping the knees over the second toes, move the hips forward.
- A slight stretch should be felt in the upper thigh area of the straight leg.
- Hold for 10 seconds, repeat both legs.



Hip Strengthening Exercises

Hip Abduction Against the Wall

- Keep your knee over your second toe.
- Push your knee up and against a solid wall or object.



Never Jump From Machinery

Jumping from machinery significantly increases the risk of injury. The shock travels through the joints of the feet, to the knees, hips and even the lower back, causing joint damage and muscle injury. In addition, the risk of injury is increased if the ground surface is uneven causing joints to twist and in some cases fractures result.



Osteoarthritis of the Hip

Job / Task Modifications

Looking at tasks with fresh eyes...

Pain can be reduced by rearranging the way everyday tasks are performed and in some cases pain can be eliminated. One technique to do this is to use trigger words¹². These are a series of words that may help to look at things differently. For example if the job is to move something heavy from ground level to chest height, rather than '*lift, twist and carry*' other words can be used:- sling, glide, push, pull, slide, roll, drag and slip. Now we can look at the task with fresh eyes, perhaps lifting can be done with a tractor and bucket, a hydraulic ram, or a group of people; pushing can be done with a trolley; pulling can be done with a rope, cable and winch; perhaps swinging can be done with a hoist; perhaps sliding it up a ramp. The task has changed from being something potentially very physically demanding to something that requires less physical effort, and is safer to do.

Assistive Equipment

Footwear is a vital part of hip care in the workplace. The Physiotherapy Association recommend footwear with comfortable well supporting innersoles be worn in the workplace. It is suggested that wearing the correct fitting footwear may also help to reduce pain in the feet, knees, and back, as the force is absorbed at ground level rather than reverberating up the body through the weight bearing joints.

Additional Hand Rails

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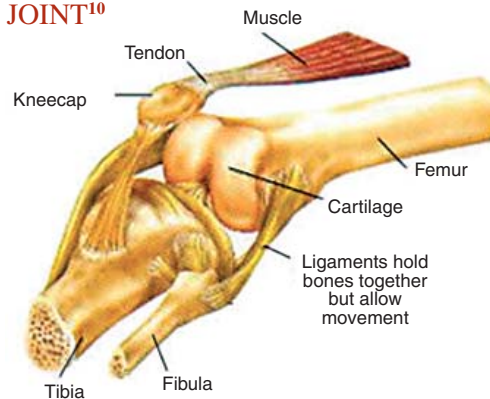
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Osteoarthritis of the Knee

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THE KNEE JOINT¹⁰



Early Intervention and Management

People with osteoarthritis of the knee are advised to participate in a number of different exercises. Swimming is one of the most beneficial of all exercises as it stretches and strengthens the muscles around joints without placing them under excessive force. Those people with osteoarthritis of the knee are advised to avoid unnecessary knee bending, stair climbing, or lifting of heavy objects.

Some people may benefit from joint replacement surgery. Please talk with your doctor about options for you.

Knee Stretching Exercises

Quadriceps Stretch

- Reach behind with your right hand and grab the top of your right foot.
- Slowly pull the right foot directly towards your right buttocks.
- Slowly move your hips forward until you feel a stretch in the front of your bent leg.
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Osteoarthritis of the Knee

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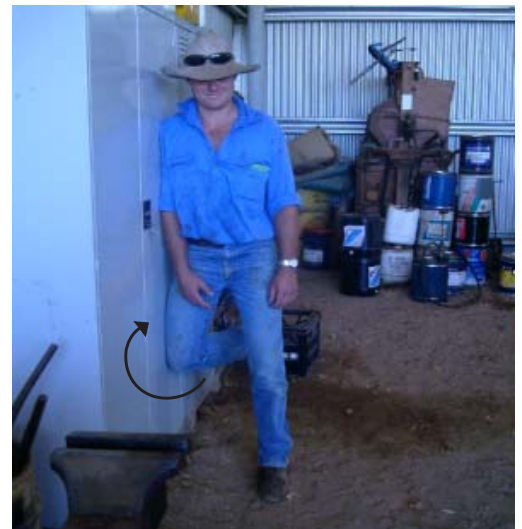
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By adding an extra step to the base of the existing steps the strain placed on the back from the first step is reduced.

For more information see the *Safe Tractor Access* Guidance Note¹³ available from the Australian Centre for Agricultural Health and Safety.

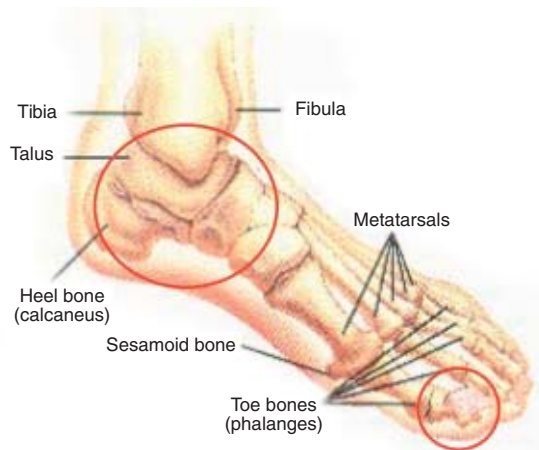


Osteoarthritis of the Foot

There are many things that can be done to alleviate the pain of osteoarthritis in the lower limbs. Strengthening the muscles around the joint is one way in which pain and discomfort can be relieved.

Each lower limb has 31 bones: 1 in hip (one side of pelvis), 4 in leg, 7 in ankle, 19 in foot and toes.

THE FOOT¹⁰



Early Intervention and Management

People with osteoarthritis should participate in a variety of different exercises for different benefits to the body.

By stretching the muscles surrounding damaged or painful joints blood flow can increase and the muscles become toned and better able to work efficiently, without pain. *Once muscles are stretched it is important to strengthen them.*

Swimming is an excellent form of exercise for those with of the foot and ankle pain. Swimming relieves the loaded pressure on the joints of the foot and increases the range of movement at the ankle. When the water is warm the heat increases the circulation and improves blood flow and joint flexibility.

Foot and Ankle Stretching Exercises

Ankle Dorsiflexion and Plantarflexion

- Move your foot up toward your body.
- Keep your knee straight.
- Hold this position for six seconds.
- Then move foot slowly downwards and hold for six seconds.
- Return to the starting position and do six repetitions.
- Repeat the entire exercise with the other leg.



Osteoarthritis of the Foot

Foot and Ankle Stretching Exercises

Ankle Dorsiflexion and Plantarflexion

- Stand in front of the workshop bench.
- Place both hands on the bench
- Raise yourself up onto your toes. Remain on toes for six seconds.
- Slowly return to the standing position and rock back on your heels.
- Hold position for six seconds.



Calf and Achilles Tendon Stretch

Part 1.

- Keeping knees in line with the second toe.
- Bend your front leg.
- Keeping the heel of your back foot firmly on the floor. Lean forward and grasp a solid support.
- Slowly move your hips forward until you feel a stretch in the calf of your straight leg.
- Be sure to keep the heel of the foot of the straight leg on the ground and your toes pointed straight ahead.
- Hold an easy stretch for 30 seconds – do not bounce. Stretch both legs.



Part 2.

- Slightly bend the back knee, keeping the knee over the second toe with the foot flat.
- This area needs only a slight feeling of stretch. Hold for 15 seconds.

Never Jump From Machinery

Jumping from machinery increases the risk of injury significantly. The shock travels through the joints of the feet, to the knees, hips and even the lower back, causing joint damage and muscle injury. In addition, the risk of injury is increased as the ground surface may be uneven causing joints to twist and in some cases fractures result.



Osteoarthritis of the Foot

Job / Task Modifications

Footwear is a vital part of foot and ankle care in the workplace. The Physiotherapy Association recommend footwear with comfortable well supporting innersoles be worn in the workplace. It is suggested that wearing the correct fitting footwear may also help to reduce pain in the knees, hips and back, as the force is absorbed at ground level rather than reverberating up the body through the weight bearing joints.

Having a thick rubber mat at the places where you most commonly stand can help. An alternative to the mat is a timber grate, this has some 'give' in it while remaining sturdy.

Pain can be reduced by rearranging the way everyday tasks are performed and in some cases pain can be eliminated. One technique to do this is to use trigger words¹². These are a series of words that may help to look at things differently. For example if the job is to move something heavy, rather than '*lift and carry*' other words can be used:- sling, glide, push, pull, slide, roll, drag and slip. Now we can look at the task with fresh eyes, perhaps pushing can be done with a tractor and bucket, a hydraulic ram, or a group of people; or pulling can be done with a rope, cable and winch; perhaps swinging can be done with a hoist.



Assistive Technology

In an attempt to reduce pain and discomfort, the workplace can be redesigned. Here are some suggested workplace modifications.

Additional Hand Rails

If there aren't already adequate hand rails on the machinery – weld some on. By using hand rails the pressure of lifting the body is taken from the hips, knees and feet to be shared with the upper body.



Additional Steps

By adding an extra step to the base of the existing steps the strain placed on the back from the first step is reduced.

For more information see the *Safe Tractor Access* Guidance Note¹³ available from the Australian Centre for Agricultural Health and Safety.



Osteoarthritis of the Shoulder

While osteoarthritis of the shoulder is relatively uncommon, pain from a past injury, overuse or muscle damage is common.

Early Intervention and Management

By stretching the muscles surrounding damaged or painful joints blood flow can increase and the muscles become toned and better able to work efficiently, without pain. Once muscles are stretched it is important to strengthen them, to do one and not the other can cause increased pain and may cause further injury.

Shoulders Stretching Exercises

Side Stretch

- Stretch your arm overhead and slowly bend to the opposite side.
- Don't twist.
- Hold 5 seconds, return to start. Repeat 8 times. Switch sides.
- Do not hold your breath.



Side Stretch

- With arms overhead, hold the elbow of one arm with the hand of the other arm.
- Keeping knees directly over your second toe gently pull your elbow behind your head as you bend from the hips to the side.
- Hold an easy stretch for 10 seconds. Do both sides.
- Do not hold your breath.



Chest and Arm Stretch

- In a standing position interlace your fingers above your head.
- Push your arms slightly back and up. Hold for 5 seconds.
- Bring elbows down pulling your shoulder blades down and in.
- Hold stretch for 15 seconds.
- Do not hold your breath.



Cross Shoulder Stretch

- Cross left arm across the chest to the right shoulder.
- Hold the left arm at the elbow with the right hand.
- Keep shoulders even as you complete this stretch.
- Hold stretch for a count of 8 and repeat with the opposite arm.
- Make sure back is straight and feet are firmly placed on the ground.



Osteoarthritis of the Shoulder

Shoulders Stretching Exercises

Pectoralis Stretch

- Holding a solid object with both hands behind your back, a little below shoulder height.
- Lean forward away from the object.
- Hold stretch for 15 seconds.
- Repeat as often as possible.
- Do not hold your breath.



Shoulders Strengthening Exercises

Wall Push Ups

- Keep knees over the second toe.
- Place hands against a solid object or wall.
- Place hands wider than the shoulders.
- (*As you get stronger bring your hands closer together*).
- Lower and raise the torso, keeping the elbows close to the body.
- Keep the head and trunk in a straight line.
- Do not hold your breath.



Job / Task Modifications

Looking at tasks with fresh eyes...

Pain can be reduced by rearranging the way everyday tasks are performed and in some cases pain can be eliminated. One technique to do this is to use trigger words¹². These are a series of words that may help to look at things differently. For example if the job is to move something heavy, rather than '*lift and carry*' other words can be used:- sling, glide, push, pull, slide, roll, drag and slip. Then look again at the task with fresh eyes, perhaps pushing can be done with a bag trolley, or a group of people; or pulling can be done with a rope, cable and winch; perhaps swinging can be done with a hoist.

Where assistive equipment is not available better lifting/carrying techniques must be employed. See osteoarthritis of the back, for lifting techniques.

Osteoarthritis of the Shoulder

Assistive Equipment

There are lots of pieces of assistive equipment found commonly in workshops or around the farm. Step ladders, bag trolleys and little trailers or wheel barrows can be used to dramatically reduce the risk of shoulder injury.



Hoist, winches and cranes

This man is able to lift a tonne of steel onto the back of his ute without lifting more than his finger.



Osteoarthritis in the Fingers & Wrist

Each upper limb has 32 bones: 2 in the shoulder, 3 in the arm, 8 in the wrist, 19 in the hand and fingers.

THE HAND¹⁰



Osteoarthritis of the hands most often affects the end finger joints producing bony spurs or nodules. The base of the thumb is another site¹⁴.

Symptoms of Osteoarthritis of the Fingers and Wrist

Osteoarthritis of the hands and fingers is an inflammation of the joints that results when cartilage between the bones deteriorates, causing the bones to rub together. A pair of healthy hands, left, is contrasted with a pair of osteoarthritic hands, right¹⁰.



Early Intervention and Management

If you are experiencing pain in the hand, now is the time to act!

Pain can begin to interfere with tasks that you may have been able to do previously, as time goes on the inflammation may subside and pain may be intermittent. Over time changes may need to be made to the way you carry out some tasks.

In order to remobilise the joint and strengthen the muscles surrounding the joint a series of stretching exercises followed by some strengthening exercises are an effective way of improving joint function and reducing pain.

Hand and Wrist Stretching Exercises

If a preexisting condition of carpal tunnel is diagnosed, or pins and needles are felt - STOP, please see your doctor or health care professional before you continuing undertake these exercises.

Wrist and Finger Stretch

- Using your opposite hand push your thumb down towards your forearm.
- Try to place the palm of your hand against your wrist.
- Hold for 10 seconds. Repeat with both hands.



Wrist and Finger Stretch

- Arms outstretched.
- Pull the fingers back towards the forearm.
- Vary the angle of your hand and you will achieve a slightly different stretch.
- Hold for 10 seconds. Repeat with both hands.



Osteoarthritis in the Fingers & Wrist

Hand and Wrist Strengthening Exercises

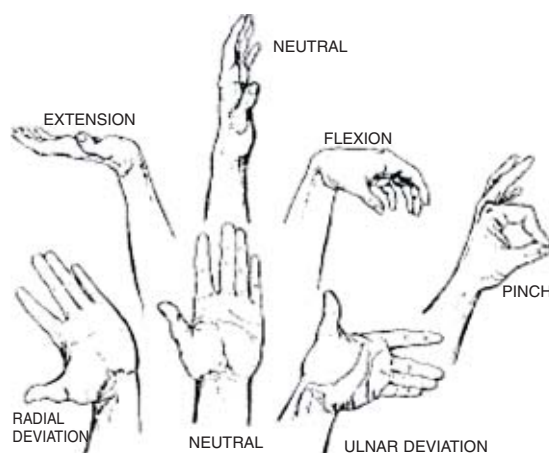
Hand, Wrist and Forearm Strengthening Exercise

- Grasp a tennis ball, or other firm but pliable ball, and squeeze firmly.
- Repeat often with both hands.



Wrist Extension and Flexion

- Rest your forearm on a solid surface.
- Using a manageable weight, such as a spanner, allow your wrist to drop slowly down, flexing the wrist, as seen below.
- Lift the weight directly up, extending the wrist, as seen below.
- Repeat action 10 times using both hands.



Job / Task Modifications

Nearly all hand tools are unsuitable for repetitive work, however hand tools need not necessarily be used the same way each time¹⁵. By changing the position of the hand tool or the body, different muscle groups can be used so fatigue does not set in.

Pictured left are the common wrist positions¹⁶. ***Neutral hand positions are the most comfortable and are less stressful on the wrist, hands and fingers.***

Below are some examples of how holding hand tools in a different position can reduce pain and discomfort.

Osteoarthritis in the Fingers & Wrist

Reducing Twisting of the Wrist

The left example is a common way in which screw drivers and other hand tools are used. Continual use of the wrist in this way can cause pain or injury. In addition the shoulder is held in a high static position causing fatigue, aching and soreness to develop in the muscles around the shoulder joint.

The right example is a better way to hold the hand. The wrist is held in a neutral position and the shoulder has dropped.



Reducing Ulna Deviation

Using pliers, tin snips and bolt cutters often causes wrist pain and jarring of the fingers. In addition the shoulder is held in a high static position causing fatigue.

The right example is a better way to hold the hand. The wrist is held in a neutral position and the shoulder has dropped.

Selecting pliers that have a spring action, similar to gardening sectors, can help to reduce the jarring effect when cutting through thicker materials and wire.



Reducing Wrist Extension and Deviation

The left example is how pliers are more commonly held, while the bottom example demonstrates the hand held in a neutral position. The muscles of the forearm are used more efficiently in the right example and fatigue and injury are less likely to develop.

The thumb is used to force the pliers to slide the plastic insulation off the wire. For someone with osteoarthritis of the fingers and thumb this task could be very painful and for some impossible, however holding the hand in a neutral position, and using a vice or multigrips to hold the wire, this same task can be accomplished.



Osteoarthritis in the Fingers & Wrist

Assistive Equipment

Magnetised Screwdrivers

Magnetising screwdrivers and other commonly used hand tools can reduce the need to use a pinch grip for extended periods of time, it also helps if vision is reduced and fine dexterity is not possible.

Screwdriver Aid

Increase the leverage on tough screws by welding a nut onto the shaft of your screwdrivers. This simple adaptation enables increased torque to be applied to any screwdriver by the use of a lever action (when using a spanner), rather than relying in hand grip strength.

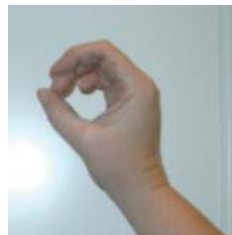
Ratchet Spanners

Spanners with a ratchet in them are now available. These spanners reduce the need to fit off and replace the spanner after each turn, in addition they can be used to loosed as well as tighten with out any hassles.

Hand Tools¹⁷

The right tool starts with the grip, it should be pliable and nonslip. A pliable, soft grip will protect your joints and help keep your hand from cramping.

To find the right hand grip fit, make a circle with your index finger and thumb. That's how big the grip of your tool should be, giving you an optimum power grip.



When buying new tools, look for tools with a depression or ridge on the handle this will keep your hand lined up with the tool in a neutral position - with the thumb up and the wrist straight. This will keep you from straining your hand, arm and shoulder and encourage you to use the tool in a smooth, gliding motion.



Modifying the tools you already have¹⁷

Extending the handle length of your current tools can make them easier to use. Increasing the length of the handle will save you excessive bending or overextending your reach as well as give you greater leverage.

Any tool can be easily and inexpensively modified to make it right for you. For example, to make a tool handle pliable and nonslip, place a bicycle grip onto the tool handle or wrap the grip with electric tape. To make a handle longer, you can simply heat a piece of PVC pipe, cut to the specified length, and fit it over the existing handles of your tools, the PVC can also be bent to form contoured handles and better grips.



Osteoarthritis in the Fingers & Wrist

Features to consider when using manual hand tools¹⁷

Manual hand tools should be ergonomically designed to reduce musculoskeletal stresses and strains and enable an efficient use of the fingers, hands, wrists and arms.

- Size of the grip - allowance should be made for a power grip in preference to a pinch grip (1-2 fingers and thumb) a large gripping surface exerts low even pressure across the hand. Thumb and finger should slightly overlap around a closed grip for maximum strength.
- The tool design should enable the wrist to be held in a neutral position and reduce the risk of hands getting caught in tight spots.
- An insulated grip protects hands from heat and cold.
- Vibration dampening tool grips reduces vibration to muscles.
- There should be no sharp edges on the grip surface, rather a soft covering on the edges and pressure points.
- Grip should be slip resistant.
- Tolerate oil and grease.
- For tools that open and close a spring, which returns the handle to an open position, can be fitted.
- Tools should be designed for use with both hands if required. Two handed tools distribute exertion and provide better control.
- Tools should have optimal weight for its purpose, and be well balanced.
- If required, tools should be adjustable for use in different positions and be easily readjusted without changing grip.
- Tools should be available in different sizes suitable for different tasks.
- Consider using vices, multigrips or fixtures (instead of hands) to hold material.

Features to consider when using power tools¹⁷

Using a power tool instead of a manual tool may reduce some cumulative trauma risk factors.

- Weight – is it manageable?
- Balance - is it top heavy?
- Handle design - does it have an upright handle which enables wrist and fingers to be held in a neutral position?
- Grip size and shape - does it allow for 2 hands to be used? Some tools have a fixed position auxiliary handle to allow two handed operation.
- Controls position - are they close to the handle for easy finger operation eg. trigger grip.

Useful Websites

AgrAbility Australia Resource Centre www.farmsafe.org.au

Australian Arthritis Foundation www.arthritisfoundation.com.au

Missouri Arthritis and Rehabilitation
Research and Training Centre www.muhealth.org/~arthritis

Arthritis and Glucosamine Resource Centre www.arthritis-glucosamine.net

Technical Aids for the Disabled www.technicalaid.org.au

Lifestyle Site www.femail.com.au/prescription_healthy_lifestyle

Resources

Resources Available

AgrAbility Australia Resource Centre

PO Box 256 Moree NSW 2400

Ph: 02 6752 5297 Fax: 02 6752 6639 Email: katieb@health.usyd.edu.au

Technical Aids for the Disabled

PO Box 336 Camperdown NSW 2050

Ph: 1300 300 324 Fax: 02 9517 2058

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