Click to verify



```
The treatment for ataxia can vary depending on exactly what type of ataxia you have. It's sometimes possible to treat the underlying cause of the condition so it improves or stops getting worse, but in most cases this isn't possible and you'll have treatment to relieve your symptoms. You'll usually be cared for by a group of healthcare professionals
called amultidisciplinary team (MDT), who willwork with you to come up with a care plan. Your MDT will probably include a neurologist, physiotherapist and specialist nurse, among others. Your care plan will be assessed, and the plan will
outlinehow these needs can best be met. The plan will also address any futureneeds you may have. You'llnormallyhave regular appointments with your MDT or GP to review your progress. In some cases, you may be seen in a specialist ataxia centre. Treatments for the various symptoms of ataxia are discussed in the following sections, although you
may not experience all of the problems described. Speech and language therapy speech and language therapy and swallowing problems (dysphagia). The therapist will be able to advise youabout how to make your voice sound clearer. For example, they
may suggest:changing your posture to improve the quality of your voicecarrying out exercises to strengthen the muscles used when speakingmore slowlyto emphasise each wordusing breathing techniques to improve your speech fets worse, you may want to consider using speaking aids such as a laptop computer connected to
a voice synthesiser. Your therapist will be able to advise you about the equipment available. To treat dysphagia, your therapist will be able to teach you exercises to stimulate the nerves used to trigger your swallowing reflex and strengthen the muscles used when swallowing. You may also be referred to advise you about the equipment available. To treat dysphagia, your therapist will be able to teach you exercises to stimulate the nerves used to trigger your swallowing.
diet may need to include food that's easier to swallow. Read more about treating dysphagia. Occupational therapy is to teach you how to adapt to your gradual loss of mobility and develop new skills you can use to carry out daily activities. An occupational therapy is to teach you how to use a wheelchair and
other mobility devices. They can also advise you about modifications you can make to your house, such as installing guide rails or a stair lift, to help make your life easier. Physiotherapy f you have ataxia, physiotherapy f you ha
(contractures). A physiotherapist will be able to teach you a number of physical exercises you can do every day to help strengthen and stretch your muscles. They may also be able to recommend walking aids to help you get around. Muscle problems from the problems f
baclofen or tizanidinemay be used to control these symptoms. If these aren't effective, an injection of botulinum toxin (Botox) may be given. This works by blocking the signals from yourbrain to the affected muscles. The effects of the injection will usually last for up to 3 months. Bladder problems Bladder problems, such as urinary urgency or, more
rarely, urinary incontinence, sometimes affect people with ataxia. In some cases, bladder problems can be controlled using a number of self care techniques, such as limiting fluid intake during the day, planning regular trips to the toilet, and avoiding drinks known to stimulate urine production, such as limiting fluid intake during the day, planning regular trips to the toilet, and avoiding drinks known to stimulate urine production, such as limiting fluid intake during the day, planning regular trips to the toilet, and avoiding drinks known to stimulate urine production, such as limiting fluid intake during the day, planning regular trips to the toilet, and avoiding drinks known to stimulate urine production, such as limiting fluid intake during the day, planning regular trips to the toilet, and a limiting fluid intake during the day, planning regular trips to the toilet, and a limiting fluid intake during the day, planning regular trips to the toilet, and a limiting fluid intake during the day, planning regular trips to the toilet, and a limiting fluid intake during the day, planning regular trips to the toilet, and a limiting fluid intake during the day, planning regular trips to the toilet, and a limiting fluid intake during the day, planning regular trips to the toilet, and a limiting fluid intake during the day, planning regular trips to the day, plann
require a type of medication known as antimuscarinic. This will help relax the bladder may also help. Others may find it difficult to empty their bladder completelywhen they go to the toilet. This can lead to small amounts of urine leaking out later on. In
such cases, it may be necessary to insert a small tube known as aurinary catheter into the bladder to help drain the urine. Eye problems are common in some cases of ataxia. Oscillopsia is an eye problems are common in some cases of ataxia. Oscillopsia is an eye problems are common in some cases of ataxia.
reading difficult. This can sometimes be treated using medication such as gabapentin to control the muscles that move the eyes. Some people with ataxia experience double vision, where you see 2 images of a single object. It may be possible to treat this by attaching a wedge-shaped piece of glass or plastic called a prism to your glasses. Erectile
dysfunctionAs a result ofunderlying nerve damage, some men with ataxia will experiencedifficulty getting or maintaining an erection(erectile dysfunction). This are founderlying nerve damage, some men with ataxia will experiencedifficulty getting or maintaining an erection(erectile dysfunction). This are founderlying nerve damage, some men with ataxia will experiencedifficulty getting or maintaining an erection(erectile dysfunction). This are founderlying nerve damage, some men with ataxia will experiencedifficulty getting or maintaining an erection (erectile dysfunction). This are founderlying nerve damage, some men with ataxia will experiencedifficulty getting or maintaining an erection (erectile dysfunction). This are founderlying nerve damage, some men with ataxia will experiencedifficulty getting or maintaining an erection (erectile dysfunction). This are founderlying nerve damage, some men with ataxia will experiencedifficulty getting or maintaining an erection (erectile dysfunction) are founderly included as a founde
about treating erectile dysfunction. Fatigue Many people with neurological conditions such as ataxia report feeling extremely tired and lethargic (lacking in energy). It's thought this is partly caused by disturbed sleepand the physical efforts of having to cope with the loss of co-ordination. A physiotherapist may be able to help youincrease your stamina
levels, and an occupational therapistcan advise youabout how to adapt your daily activities to help you cope with fatigue better. Nerve pain. The medical term for nerve pain is neuropathic pain, which is often experienced as a burning, achingor shooting pain, or sometimes tingling, in certain parts
of the body. Traditional painkillers such asparacetamol or ibuprofen aren't usually effective in treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed and so you may be prescribed and so you may be prescribed and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and you will be a minimal pain 
some types ofataxia. This can be seriousasit can place strain on the heart, affect the normal blood flow through the heart, and cause heartbeat irregularities (arrhythmias). If you develop cardiomyopathy, you'll receive regular check-ups from a cardiologist (a heart specialist). You may need to take medication to treat any problems as they
develop. Depression Living with a long-term condition such as ataxia can be stressful and can often cause include feeling down or hopeless during the past monthand no longer taking pleasure in thethings you enjoy. You should contact
your GP or MDT for advice if you think you may be depressed. There areseveral treatments for depression, such as antidepressants and talking therapies such as cognitive behavioural therapy (CBT). You may also find it useful to contact the talking therapies such as cognitive behavioural therapy (CBT). You may also find it useful to contact the talking therapies such as cognitive behavioural therapy (CBT). You may also find it useful to contact the talking therapies such as cognitive behavioural therapy (CBT). You may also find it useful to contact the talking therapies such as cognitive behavioural therapy (CBT). You may also find it useful to contact the talking therapy (CBT). You may also find it useful to contact the talking t
Thursday, 10.30am to 2.30pm. In a few cases of ataxia, it may be possible to improve the condition or stop it getting worse by treating the underlying cause. For example: ataxia with vitamin E deficiency can often be controlled or improved with vitamin E supplements episodic ataxia can often be controlled with a medication called acetazolamide and by
avoiding triggers such as stress, alcohol and caffeineacquired ataxia can sometimes be treated depending on the specific cause for example, antibiotic or antiviral medication may help if it's caused by an infectionIfacquired ataxia iscaused by serious underlying brain damage, such as damagefrom a strokeor a severe head injury, it may not be possible
to improve the condition. If this is the case, the treatment for ataxia can vary depending on exactly what type of ataxia you have. It's sometimes possible to treat the underlying cause of the condition so it improves
or stops getting worse, but in most cases this isn't possible and you'll have treatment to relieve your symptoms. You'll usually be cared for by a group of healthcare professionals called amultidisciplinary team (MDT), who willwork with you to come up with a care plan. Your MDT will probably include a neurologist, physiotherapist and specialist nurse,
among others. Your care plan will playan important part in the management ofyour condition. Your physical, social and psychological needs will be assessed, and the plan will outlinehow these needs can best be met. The plan will also address any futureneeds you may have. You'llnormally have regular appointments with your MDT or GP to review your
progress. In some cases, you may be seen in a specialist ataxia centre. Treatments for the various symptoms of ataxia are discussed in the following sections, although you may not experience all of the problems described. Speech and language therapy.
ataxia slurred speech (dysarthria) and swallowing problems (dysphagia). The therapist will be able to advise youabout how to make your posture to improve the quality of your voicecarrying out exercises to strengthen the muscles used when speakingspeakingmore slowlyto emphasise
each wordusing breathing techniques to improve your speech gets worse, you may want to consider using speaking aids such as a laptop computer connected to a voice synthesiser. Your therapist will be able to advise you about the equipment available. To treat dysphagia, your therapist will be able to teach you exercises to stimulate
the nerves used to trigger your swallowing. You may also be referred to adjetitian for dietary advice. For example, your diet may need to include food that's easier to swallow need to include food that's easier to swallow. Read more about treating dysphagia. Occupational therapy is to teach you how to adapt
to your gradual loss of mobility and develop new skills you can use to carry out daily activities. An occupational therapist may be able to teach you how to use a wheelchair and other mobility devices. They can also advise you about modifications you can make to your house, such as installing guide rails or a stair lift, to help make your life
easier. Physiotherapy If you have ataxia, physiotherapy can help you maintain the use of your arms and legs, and prevent your muscles weakening or getting stuck in one position (contractures). A physiotherapy can help you maintain the use of your arms and legs, and prevent your muscles weakening or getting stuck in one position (contractures). A physiotherapy can help you maintain the use of your arms and legs, and prevent your muscles weakening or getting stuck in one position (contractures).
able to recommend walking aids to help you get around. Muscle problems. If these aren't effective, an injection of botulinum toxin (Botox) may be given. This works by blocking the signals from
yourbrain to the affected muscles. The effects of the injection will usually last for up to 3 months. Bladder problems, such as limiting fluid
intake during the day, planning regular trips to the toilet, and avoiding drinks known to stimulate urine production, such as caffeine and alcohol. Some people may also require a type of medication known as antimuscarinic. This will help relax the bladder, reducing the frequent urge to urinate. Occasionalinjections of botulinum toxin into the bladder
may also help. Others may find it difficult to empty their bladder completelywhen they go to the toilet. This can lead to small amounts of urine leaking out later on. In such cases, it may be necessary to insert a small tube known as aurinary catheter into the bladder to help drain the urine. Eye problems are common in some cases of ataxia
Oscillopsia is an eye problemcaused by involuntary movement of the eyes from side to side or up and down. It can cause visual disruption, making tasks such as gabapentin to control the muscles that move the eyes. Some people with ataxia experience double vision, where you
see 2 images of a single object. It may be possible to treat this by attaching a wedge-shaped piece of glass or plasticcalled a prism to your glasses. Erectile dysfunction are result of underlying nerve damage, some men with ataxia will experience difficulty getting or maintaining an erection (erectile dysfunction). This can often be treated using a group of
medications known as phosphodiesterase-5 (PDE-5) inhibitors, such assildenafil (sold as Viagra). These help increase blood flow to the penis. Read more about treating erectile dysfunction. Fatigue Many people with neurological conditions such as ataxia report feeling extremely tired and lethargic (lacking in energy). It's thought this is partly caused by
disturbed sleepand the physical efforts of having to cope with the loss of co-ordination. A physiotherapist may be able to help you cope with fatigue better. Nerve pain Damage to the nerve endings can result in nerve pain. The
medical term for nerve pain is neuropathic pain, which is often experienced as a burning, achingor shooting pain, or sometimes tingling, in certain parts of the body. Traditional painkillers such asparacetamol or ibuprofen aren't usually effective in treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline,
gabapentin or pregabalin. Read more about treating neuropathy (damage to the heart, affect the normal blood flow through the heart, and cause heartbeat irregularities (arrhythmias). If you develop
cardiomyopathy, you'll receive regular check-ups from a cardiologist (a heart specialist). You may need to take medication to treat any problems as they develop. Depression a cardiologist (a heart specialist). You may need to take medication to treat any problems as they develop. Depression a cardiologist (a heart specialist).
you may be depressed include feeling down or hopeless during the past monthand no longer taking pleasure in thethings you enjoy. You should contact your GP or MDT for advice if you think you may be depressed. There are several treatments for depression, such as antidepressants and talking therapies such as cognitive behavioural therapy
(CBT). You may also find it useful to contactAtaxia UK, a leading charity for people affected by ataxia. Their helpline number is 0800 995 6037, openMonday to Thursday, 10.30am to 2.30pm. In a few cases of ataxia, it may be possible to improve the condition or stop it getting worse by treating the underlying cause. For example: ataxia with vitamin E
deficiency can often be controlled or improved with vitamin E supplementsepisodic ataxia can sometimes be treated depending on the specific cause for example, antibiotic or antiviral medication may help if it's
caused by an infectionIfacquired ataxia iscaused byserious underlying brain damage, such as damagefrom a strokeor a severe head injury, it may not be possible to improve the condition. If this is the case, the treatments mentioned above can be used tocontrol your symptoms. Page last reviewed: 16 April 2021 Next review due: 16 April 2024 The
treatment for ataxia can vary depending on exactly what type of ataxia you have. It's sometimes possible to treat the underlying cause of the condition so it improves or stops getting worse, but in most cases this isn't possible and you'll have treatment to relieve your symptoms. You'll usually be cared for by a group of healthcare professionals called
amultidisciplinary team (MDT), who willwork with you to come up with a care plan. Your MDT will probably include a neurologist, physiotherapist and specialist nurse, among others. Your care plan will playan important part in the management ofyour condition. Your physical, social and psychological needs will be assessed, and the plan will
outlinehow these needs can best be met. The plan will also address any futureneeds you may be seen in a specialist ataxia centre. Treatments for the various symptoms of ataxia are discussed in the following sections, although you
may not experience all of the problems described. Speech and language therapy A speech and language therapist will be able to help with two of the most common symptoms of ataxia slurred speech (dysarthria) and swallowing problems (dysphagia). The therapist will be able to advise youabout how to make your voice sound clearer. For example, they
may suggest:changing your posture to improve the quality of your voicecarrying out exercises to strengthen the muscles used when speakingspeakingmore slowlyto emphasise each wordusing breathing techniques to improve your speech fets worse, you may want to consider using speaking aids such as a laptop computer connected to
a voice synthesiser. Your therapist will be able to advise you about the equipment available. To treat dysphagia, your therapist will be able to teach you exercises to stimulate the nerves used to trigger your swallowing reflex and strengthen the muscles used when swallowing. You may also be referred to advise you about the equipment available. To treat dysphagia, your therapist will be able to teach you exercises to stimulate the nerves used to trigger your swallowing.
diet may need to include food that's easier to swallow. Read more about treating dysphagia. Occupational therapy is to teach you how to adapt to your gradual loss of mobility and develop new skills you can use to carry out daily activities. An occupational therapist may be able to teach you how to use a wheelchair and
other mobility devices. They can also advise you about modifications you can make to your house, such as installing guide rails or a stair lift, to help make your life easier. Physiotherapy If you have ataxia, physiotherapy can help you maintain the use of your arms and legs, and prevent your muscles weakening or getting stuck in one position
(contractures). A physiotherapist will be able to teach you a number of physical exercises you can do every day to help strengthen and stretch your muscles. They may also be able to recommend walking aids to help you get around. Muscle problems If you're experiencing muscle spasms, cramps and stiffness, muscle relaxant medication such as
baclofen or tizanidinemay be used to control these symptoms. If these aren't effective, an injection of botulinum toxin (Botox) may be given. This works by blocking the signals from yourbrain to the affected muscles. The effects of the injection will usually last for up to 3 months. Bladder problems given, such as urinary urgency or, more
rarely, urinary incontinence, sometimes affect people with ataxia. In some cases, bladder problems can be controlled using a number of self care techniques, such as limiting fluid intake during the day, planning regular trips to the toilet, and avoiding drinks known to stimulate urine production, such as caffeine and alcohol. Some people may also
require a type of medication known as antimuscarinic. This will help relax the bladder may also help. Others may find it difficult to empty their bladder completelywhen they go to the toilet. This can lead to small amounts of urine leaking out later on. In
such cases, it may be necessary to insert a small tube known as aurinary catheter into the bladder to help drain the urine. Eye problems are common in some cases of ataxia. Oscillopsia is an eye problems are common in some cases of ataxia. Oscillopsia is an eye problems are common in some cases of ataxia.
reading difficult. This can sometimes be treated using medication such as gabapentin to control the muscles that move the eyes. Some people with ataxia experience double vision, where you see 2 images of a single object. It may be possible to treat this by attaching a wedge-shaped piece of glass or plastic alled a prism to your glasses. Erectile
dysfunctionAs a result ofunderlying nerve damage, some men with ataxia will experiencedifficulty getting or maintaining an erection(erectile dysfunction). This are founderlying nerve damage, some men with ataxia will experiencedifficulty getting or maintaining an erection(erectile dysfunction). This are founderlying nerve damage, some men with ataxia will experiencedifficulty getting or maintaining an erection(erectile dysfunction). This are founderlying nerve damage, some men with ataxia will experiencedifficulty getting or maintaining an erection(erectile dysfunction). This are founderlying nerve damage, some men with ataxia will experiencedifficulty getting or maintaining an erection (erectile dysfunction). This are founderlying nerve damage, some men with ataxia will experiencedifficulty getting or maintaining an erection (erectile dysfunction). This are founderlying nerve damage, some men with a taxia will experienced an experienced and a supplication of the expe
about treating erectile dysfunction. Fatigue Many people with neurological conditions such as ataxia report feeling extremely tired and lethargic (lacking in energy). It's thought this is partly caused by disturbed sleepand the physical efforts of having to cope with the loss of co-ordination. A physiotherapist may be able to help youincrease your stamina
levels, and an occupational therapistcan advise youabout how to adapt your daily activities to help you cope with fatigue better. Nerve pain is neuropathic pain, which is often experienced as a burning, achingor shooting pain, or sometimes tingling, in certain parts
of the body. Traditional painkillers such asparacetamol or ibuprofen aren't usually effective in treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain, so you may be prescribed and so you may be prescribed and so you may be prescribed and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and so you may be prescribed as a minimal pain and you will be a minimal pain 
some types ofataxia. This can be seriousasit can place strain on the heart, affect the normal blood flow through the heart, and cause heartbeat irregularities (arrhythmias). If you develop cardiomyopathy, you'll receive regular check-ups from a cardiologist (a heart specialist). You may need to take medication to treat any problems as they
develop. Depression Living with a long-term condition such as ataxia can be stressful and can often cause include feeling down or hopeless during the past monthand no longer taking pleasure in thethings you enjoy. You should contact
your GP or MDT for advice if you think you may be depressed. There areseveral treatments for depression, such as antidepressants and talking therapies such as cognitive behavioural therapy (CBT). You may also find it useful to contact Ataxia UK, a leading charity for people affected by ataxia. Their helpline number is 0800 995 6037, openMonday to
Thursday, 10.30am to 2.30pm. In a few cases of ataxia, it may be possible to improve the condition or stop it getting worse by treating the underlying cause. For example: ataxia with vitamin E deficiency can often be controlled or improve the condition or stop it getting worse by treating the underlying cause. For example: ataxia with vitamin E deficiency can often be controlled or improve the condition or stop it getting worse by treating the underlying cause. For example: ataxia with vitamin E deficiency can often be controlled or improve the condition or stop it getting worse by treating the underlying cause.
avoiding triggers such as stress, alcohol and caffeineacquired ataxia can sometimes be treated depending on the specific cause for example, antibiotic or antiviral medication may help if it's caused by an infectionIfacquired ataxia iscaused by serious underlying brain damage, such as damagefrom a strokeor a severe head injury, it may not be possible
to improve the condition. If this is the case, the treatments mentioned above can be used tocontrol your symptoms. Page last reviewed: 16 April 2021 Next review due: 17 April 2021 Next review due: 18 April 2021 Next r
of coordinationSlurred speechTrouble eating and swallowingDeterioration of fine motor skillsDifficulty walkingGait abnormalitiesEye movement abnormalitiesEye movement abnormalitiesTremorsHeart problemsAtaxia (from Greek - [a negative prefix] + - [order] = "lack of order") is a neurological sign consisting of lack of voluntary coordination of muscle movements that can
body, which is referred to as hemiataxia. Friedreich's ataxia has gait abnormality as the most commonly presented symptom. Dystaxia is a mild degree of ataxia for indicate ataxia has gait abnormality as the most commonly presented symptom. Dystaxia is a mild degree of ataxia. [1] See also: Cerebellum is responsible for integrating a significant amount of
neural information that is used to coordinate smoothly ongoing movements and to participate in motor planning. Although ataxia is not present with all cerebellar ataxia may have trouble regulating the force, range, direction, velocity, and rhythm of muscle
contractions.[4] This results in a characteristic type of irregular, uncoordinated movement that can manifest itself in many possible ways, such as asthenia, asynergy, delayed reaction time, and dyschronometria.[5] Individuals with cerebellar ataxia could also display instability of gait, difficulty with eye movements, dysarthria, dysphagia, hypotonia,
dysmetria, and dysdiadochokinesia.[3] These deficits can vary depending on which cerebellar structures have been damaged, and whether the lesion is bi- or unilateral.[citation needed]People with cerebellar ataxia may initially present with poor balance, which could be demonstrated as an inability to stand on one leg or perform tandem gait. As the
condition progresses, walking is characterized by a widened base and high stepping, as well as staggering and lurching from side to side.[3] Turning is also problematic and could result in falls. As cerebellar ataxia becomes severe, great assistance and effort are needed to stand and walk.[3] Dysarthria, an impairment with articulation, may also be
present and is characterized by "scanning" speech that consists of slower rate, irregular rhythm, and variable volume.[3] Also, slurring of speech, tremor of the voice, and ataxic respiration may occur. Cerebellar ataxia could result with incoordination of movement, particularly in the extremities. Overshooting (or hypermetria) occurs with finger-to-
 nose testing and heel to shin testing; thus, dysmetria is evident.[3][6] Impairments with alternating movements (dysdiadochokinesia), as well as dysrhythmia, may also be displayed. Tremor of the head and trunk (titubation) may be seen in individuals with cerebellar ataxia.[3]Dysmetria is thought to be caused by a deficit in the control of interaction
torques in multijoint motion.[7] Interaction torques are created at an associated joint when the primary joint is moved. For example, if a movement required reaching to touch a target in front of the elbow, while extension of the elbow would create a torque at the wrist. These torques increase
as the speed of movement increases and must be compensated and adjusted for to create coordinated movement. This may, therefore, explain decreased coordinated movement increases and must be compensated and adjusted for to create coordinated movements. This presents itself
with postural instability, in which the person tends to separate his/her feet upon standing, to gain a wider base and to avoid titubation (bodily oscillations tending with the feet together, regardless of whether the eyes are open or closed. This is a negative Romberg's
test, or more accurately, it denotes the individual's inability to carry out the test, because the individual feels unstable even with open eyes. [citation needed]Dysfunction of the spinocerebellum (vermis and associated areas near the midline) presents itself with a wide-based "drunken sailor" gait (called truncal ataxia),[8] characterised by uncertain
starts and stops, lateral deviations, and unequal steps. As a result of this gait impairment, falling is a concern in patients with ataxia. Studies examining falls in this population show that 7493% of patients have fallen at least once in the past year and up to 60% admit to fear of falling.[9][10]Dysfunction of the cerebrocerebellum (lateral hemispheres)
presents as disturbances in carrying out voluntary, planned movements by the extremities (called appendicular ataxia).[8] These include: Intention tremor (coarse trembling, accentuated over the execution of voluntary movements, possibly involving the head and eyes, as well as the limbs and torso) Peculiar writing abnormalities (large, unequal
 letters, irregular underlining)A peculiar pattern of dysarthria (slurred speech, sometimes characterised by explosive variations in voice intensity despite a regular rhythm)Inability to perform rapidly alternating movements, known as dysdiadochokinesia, occurs, and could involve rapidly switching from pronation to supination of the forearm.
Movements become more irregular with increases of speed.[11]Inability to judge distances or ranges of movement happens. This dysmetria is often seen as undershooting, hypometria, or overshooting, hypometria, or overshooting, hypometria, or overshooting, hypometria, or overshooting, hypometria is often seen as undershooting, hypometria, or overshooting, hypometria, 
or touch his or her own nose.[11]The rebound phenomenon, also known as the loss of the check reflex, is also sometimes seen in patients with cerebellar ataxia, for example, when patients are flexing their elbows isometrically against a resistance. When the resistance is suddenly removed without warning, the patients are flexing their elbows isometrically against a resistance.
strike themselves. With an intact check reflex, the patients check and activate the opposing triceps to slow and stop the movement.[11]Patients may exhibit a constellation of subtle to overt cognitive symptoms, which are gathered under the terminology of Schmahmann's syndrome.[12]The term sensory ataxia is used to indicate ataxia due to loss of
proprioception, the loss of sensitivity to the positions of joint and body parts. This is generally caused by dysfunction of the brain that receive positional
 information, including the cerebellum, thalamus, and parietal lobes.[13]Sensory ataxia presents itself with an unsteady "stomping" gait with heavy heel strikes, as well as a postural input, such as in poorly lit environments.[14][15]Physicians
can find evidence of sensory ataxia during physical examination by having patients stand with their feet together and eyes shut. In affected patients, this is called a positive Romberg's test. Worsening of the finger-pointing test with the eyes closed is
another feature of sensory ataxia. Also, when patients are standing with arms and hands extended toward the physician, if the eyes are closed, the patients' fingers tend to "fall down" and then be restored to the horizontal extended position by sudden muscular contractions (the "ataxic hand").[16][17]The term vestibular ataxia is used to indicate
ataxia due to dysfunction of the vestibular system, which in acute and unilateral cases is associated with prominent vertigo, nausea, and vomiting. In slow-onset, chronic bilateral cases of vestibular dysfunction, these characteristic manifestations may be absent, and dysequilibrium may be the sole presentation. [18] The three types of ataxia have
overlapping causes, so can either coexist or occur in isolation. Cerebellar ataxia can have many causes despite normal neuroimaging.[19]Any type of focal lesion of the central nervous system (such as stroke, brain tumor, multiple sclerosis, inflammatory [such as sarcoidosis], and "chronic lymphocytyc inflammation with pontine perivascular
enhancement responsive to steroids syndrome" [CLIPPERS[20]]) will cause the type of ataxia corresponding to the lesion: cerebellum; sensory if in the dorsal spinal canal...(and rarely in the thalamus or parietal lobe); or
vestibular if in the vestibular system (including the vestibular areas of the cerebral cortex).[citation needed]Exogenous substances that cause ataxia mainly do so because they have a depressant effect on central nervous system function. The most common example is ethanol (alcohol), which is capable of causing reversible cerebellar and vestibular
ataxia. Chronic intake of ethanol causes atrophy of the cerebellum by oxidative and endoplasmic reticulum stresses induced by thiamine deficiency.[21]Other examples include various prescription drugs (e.g. most antiepileptic drugs have cerebellar ataxia as a possible adverse effect), Lithium level over 1.5mEq/L, synthetic cannabinoid HU-211
ingestion[22] and various other medical and recreational drugs (e.g. ketamine, PCP or dextromethorphan, all of which can cause short term ataxia, especially in high doses, are benzodiazepines.[23][24] Exposure to high levels of
methylmercury, through consumption of fish with high mercury concentrations, is also a known cause of ataxia and other neurological disorders. [25] Furthermore, those with ataxia telangiectasia may have a high sensitivity towards
gamma rays and x-rays.[27]Vitamin B12 deficiency may cause, among several neurological abnormalities, overlapping cerebellar and sensory ataxia.[28] Neuropsychological symptoms may include sense loss, difficulty in proprioception, poor balance, loss of sensation in the feet, changes in reflexes, dementia, and psychosis, which can be reversible
with treatment.[29] Complications may include a neurological disorders.[30]Symptoms of neurological disorders.[30]Symptoms of neurological disorders.[30] complications may be the presenting feature in some patients with hypothyroidism. These include reversible cerebellar ataxia, dementia, peripheral neuropathy.
psychosis and coma. Most of the neurological complications improve completely after thyroid hormone replacement therapy.[31][32]Peripheral neuropathic involvement. Spinal disorders of various types may cause sensory ataxia from the
lesioned level below, when they involve the dorsal columns.[33][34][35]Non-hereditary causes of cerebellar degeneration include chronic alcohol use disorder, head injury, paraneoplastic and non-paraneoplastic autoimmune ataxia,[36][37][38] high-altitude cerebral edema,[39] celiac disease,[40] normal-pressure hydrocephalus,[41] and infectious or
post-infectious cerebellitis.[42]Ataxia may depend on hereditary disorders consisting of degeneration of the cerebellum or of the spine; most cases feature both to some extent, and therefore present with overlapping cerebellar and sensory ataxia, even though one is often more evident than the other. Hereditary disorders causing ataxia include
autosomal dominant ones such as spinocerebellar ataxia, episodic ataxia, e
autosomal recessive spinocerebellar ataxia-14[43] and abetalipoproteinaemia. An example of X-linked ataxic condition is the rare fragile X-associated tremor/ataxia syndrome or FXTAS. Arnold Chiari malformation of the brain. It consists of a downward displacement of the cerebellar tonsils and the medulla through the foramen
magnum, sometimes causing hydrocephalus as a result of obstruction of cerebrospinal fluid outflow.[44]Succinic semialdehyde dehydrogenase deficiency is an autosomal-recessive gene disorder where mutations in the ALDH5A1 gene results in the accumulation of gamma-Hydroxybutyric acid (GHB) in the body. GHB accumulates in the nervous
system and can cause ataxia as well as other neurological dysfunction. [45] Wilson's disease is an autosomal-recessive gene disorder whereby an alteration of the ATP7B gene results in the nervous system causing demyelination of
the nerves.[47] This can cause ataxia as well as other neurological and organ impairments.[48]A male with gluten ataxia is an autoimmune disease derived from celiac disease,[49] which is triggered by the ingestion of gluten.[50][51] Early diagnosis and treatment
with a gluten-free diet can improve ataxia and prevent its progression. The effectiveness of the treatment depends on the elapsed time from the onset of the ataxia until diagnosis, because the death of neurons in the cerebellum as a result of gluten exposure is irreversible. [50] [52] It accounts for 40% of ataxias of unknown origin and 15% of all
sodium-potassium pump may be a factor in some ataxias. The Na+/K+ pump has been shown to control and set the intrinsic activity mode of cerebellar Purkinje neurons.[55] This suggests that the pump might not simply be a homeostatic, "housekeeping" molecule for ionic gradients; but could be a computational element in the cerebellum and the
brain.[56] Indeed, a ouabain block of Na+/K+ pumps in the cerebellum of a live mouse results in it displaying ataxia and dystonia is observed for lower ouabain concentrations. Antibodies against the enzyme glutamic acid decarboxylase (GAD: enzyme changing glutamate into GABA)
cause cerebellar deficits.[58] The antibodies impair motor learning and cause behavioral deficits.[59]GAD antibodies induce a synaptopathy.[61] The cerebellum is particularly vulnerable to autoimmune disorders.[62] Cerebellar circuitry has capacities to
compensate and restore function thanks to cerebellar reserve, gathering multiple forms of plasticity. LTDpathies gather immune disorders targeting long-term depression (LTD), a form of plasticity. [63] Imaging studies A CT scan or MRI of the brain might help determine potential causes. An MRI can sometimes show shrinkage of the cerebellum and
other brain structures in people with ataxia. It may also show other treatable findings, such as a blood clot or benign tumour, that could be pressing on the cerebellum. Lumbar puncture (spinal tap) A needle is inserted into the lower back (lumbar region) between two lumbar vertebrae to obtain a sample of cerebrospinal fluid for testing. Genetic
testing Determines whether the mutation that causes one of the hereditary ataxia and its effectiveness depend on the underlying cause. Treatment may limit or reduce the effects of ataxia, but it is unlikely to eliminate them entirely. Recovery
tends to be better in individuals with a single focal injury (such as stroke or a benign tumour), compared to those who have a neurological degenerative condition. [64] A review of the management of degenerative condition. [64] A review of the management of degenerative ataxia was published in 2009. [65] A small number of rare conditions presenting with prominent cerebellar ataxia are amenable to specific
treatment and recognition of these disorders is critical. Diseases include vitamin E deficiency, abetalipoproteinemia, cerebrotendinous xanthomatosis, NiemannPick type C disease, Refsum's disease, glucose transporter type 1 deficiency, episodic ataxia type 2, gluten ataxia, glutamic acid decarboxylase ataxia. [66] Novel therapies target the RNA
defects associated with cerebellar disorders, using in particular anti-sense oligonucleotides.[67]The movement disorders associated with ataxia can be managed by pharmacological treatments and through physical therapy and occupational therapy to reduce disability.[68] Some drug treatments that have been used to control ataxia include: 5-
hydroxytryptophan (5-HTP), idebenone, amantadine, physostigmine, L-carnitine or derivatives, trimethoprim/sulfamethoxazole, vigabatrin, phosphatidylcholine, acetazolamide, 4-aminopyridine, buspirone, and a combination of coenzyme Q10 and vitamin E.[65]Physical therapy requires a focus on adapting activity and facilitating motor learning for
retraining specific functional motor patterns. [69] A recent systematic review suggested that physical therapy is effective, but there is only moderate evidence to support this conclusion. [70] The most commonly used physical therapy interventions for cerebellar ataxia are vestibular habituation, Frenkel exercises, proprioceptive neuromuscular
facilitation (PNF), and balance training; however, therapy is often highly individualized and gait and coordination training are large components of therapy should include an exercise program addressing five components: static balance
dynamic balance, trunk-limb coordination, stairs, and contracture prevention. Once the physical therapist determines that the individual be prescribed and regularly engage in a supplementary home exercise program that incorporates these components to
further improve long term outcomes. These outcomes include balance tasks, gait, and individual activities of daily living. While the improvements are due to adaptations in the cerebellum or compensation by other areas of
the brain.[69]Decomposition, simplification, or slowing of multijoint movement may also be an effective strategy that therapists may use to improve function in patients with ataxia who underwent intensive upper limb
retraining.[72] Their therapy consisted of constraint-induced movement therapy which resulted in improvements of their arm function.[72] Treatment should likely include strategies to manage difficulties with everyday activities such as a cane or walker) can be provided to decrease the risk of falls associated with
impairment of balance or poor coordination. Severe ataxia may eventually lead to the need for a wheelchair. To obtain better results, possible coexisting motor deficits need to be addressed in addition to those induced by ataxia. For example, muscle weakness and decreased endurance could lead to increasing fatigue and poorer movement patterns
[citation needed]There are several assessment tools available to therapists and health care professionals working with patients with ataxia. The International Cooperative Ataxia Rating Scale (ICARS) is one of the most widely used and has been proven to have very high reliability and validity.[73] Other tools that assess motor function, balance and
coordination are also highly valuable to help the therapist track the progress of their patient, as well as to quantify the patient's functionality. These tests include, but are not limited to: The Berg Balance ScaleTandem Walking (to test for Tandem gaitability) Scale for the Assessment and Rating of Ataxia (SARA)[74] tapping tests The person must quickly
and repeatedly tap their arm or leg while the therapist monitors the amount of dysdiadochokinesia.[75] This test has several variations including finger-to-finger, finger-to-finger, and alternate nose-to-finger. [76] The term "ataxia" is sometimes used in a broader sense to indicate lack of coordination in some
physiological process. Examples include optic ataxia (lack of coordination between visual inputs and hand movements, resulting in inability to reach and grab objects) and ataxic respiratory movements, usually due to dysfunction of the respiratory centres in the medulla oblongata). Optic ataxia may be caused by
 lesions to the posterior parietal cortex, which is responsible for combining and expressing positional information and relating it to movement. Outputs of the posterior parietal cortex, basal ganglia and the cerebellum. Some neurons in the posterior parietal cortex
are modulated by intention. Optic ataxia is usually part of Balint's syndrome, but can be seen in isolation with injuries to the superior parietal lobule, as it represents a disconnection between visual-association cortex and the frontal premotor and motor cortex. [77] Ataxic cerebral palsyLocomotor ataxia Bruns apraxia Definition & Meaning's
Dictionary.com. Retrieved 13 September 2023.^ "Ataxia - Symptoms & Causes". Mayo Clinic. 3 June 2020. Retrieved 10 August 2020.^ a b c d e f g Schmahmann JD (2004). "Disorders of the cerebellum: ataxia, dysmetria of thought, and the cerebellar cognitive affective syndrome". The Journal of Neuropsychiatry and Clinical Neurosciences. 16 (3):
367378. doi:10.1176/jnp.16.3.367. PMID15377747.^ Fredericks CM (eds.). Pathophysiology of the motor systems: principles and clinical presentations. Philadelphia: F.A. Davis. ISBN0-8036-0093-3. Retrieved 6 May 2012.^ Tada M, Nishizawa M, Onodera
O (August 2015). "Redefining cerebellar ataxia in degenerative ataxias: lessons from recent research on cerebellar systems". Journal of Neurology, Neurosurgery, and Psychiatry. 86 (8): 922928. doi:10.1136/jnnp-2013-307225. PMID25637456. S2CID20887739.^ Manto M, Godaux E, Jacquy J (January 1994). "Cerebellar hypermetria is larger when the
inertial load is artificially increased". Annals of Neurology. 35 (1): 4552. doi:10.1002/ana.410350108. PMID8285591. S2CID19328973.^ Bastian AJ, Zackowski KM, Thach WT (May 2000). "Cerebellar ataxia: torque deficiency or torque mismatch between joints?". Journal of Neurophysiology. 83 (5): 30193030. doi:10.1152/jn.2000.83.5.3019.
PMID10805697. S2CID10244619.^ a b Blumenfeld H (2002). Neuroanatomy through clinical cases. Sunderland, Mass: Sinauer. pp.670671. ISBN0-87893-060-4.^ Fonteyn EM, Schmitz-Hbsch T, Verstappen CC, Baliko L, Bloem BR, Boesch S, et al. (June 2010). "Falls in spinocerebellar ataxias: Results of the EuroSCA Fall Study". Cerebellum. 9 (2)
232239. doi:10.1007/s12311-010-0155-z. PMID20157791. S2CID23247877.^ van de Warrenburg BP, Steijns JA, Munneke M, Kremer BP, Bloem BR (April 2005). "Falls in degenerative cerebellar ataxias". Movement Disorders. 20 (4): 497500. doi:10.1002/mds.20375. PMID15645525. S2CID35160189.^ a b c Schmitz TJ, O'Sullivan SB (2007).
 "Examination of Coordination". Physical rehabilitation. Philadelphia: F.A. Davis. pp.193225. ISBN 978-0-8036-1247-1.^ Manto M, Marin P (2015). "Schmahmann's syndrome - identification of the third cornerstone of clinical ataxiology". Cerebellum & Ataxias. 2: 2. doi:10.1186/s40673-015-0023-1. PMC4552302. PMID26331045.^ a b Bastian AJ (June
 1997). "Mechanisms of ataxia". Physical Therapy. 77 (6): 672675. doi:10.1093/ptj/77.6.672. PMID9184691.^ "Sensory Ataxia". Physiopedia. Retrieved 19 October 2022.^ Ruppert L, Kendig T (2012). "A Pt Intervention for a Patient with Sensory Ataxia in the Acute Care Oncology Setting". Rehabilitation Oncology. 30 (1): 2425. doi:10.1097/01893697.
201230010-00010. ISSN2168-3808. Halmgyi GM, Curthoys IS (September 2021). "Vestibular contributions to the Romberg test: Testing semicircular canal and otolith function". European Journal of Neurology. 28 (9): 32113219. doi:10.1111/ene.14942. PMID34160115. Forbes J, Munakomi S, Cronovich H (2024). "Romberg Test". StatPearls.
Treasure Island (FL): StatPearls Publishing. PMID33085334. Retrieved 16 April 2024. Ashizawa T, Xia G (August 2016). "Ataxia". Continuum. 22 (4 Movement Disorders): 12081226. doi:10.1212/CON.000000000000362. PMC5567218. PMID27495205. "Ataxia: What It Is, Causes, Symptoms, Treatment & Types". Cleveland Clinic. Retrieved 8
Ataxia: Underpinnings of Neuronal Death in the Cerebellum". International Journal of Environmental Research and Public Health. 18 (16): 8678. doi:10.3390/ijerph18168678. PMC8391842. PMID34444449.^ "Inadvertent Ingestion of Marijuana --- Los Angeles, California, 2009". Archived from the original on 11 May 2011. Retrieved 3 September
2009.^ Browne TR (May 1976). "Clonazepam. A review of a new anticonvulsant drug". Archives of Neurology. 33 (5): 326332. doi:10.1001/archneur.1976.00500050012003. PMID817697.^ Gaudreault P, Guay J, Thivierge RL, Verdy I (1991). "Benzodiazepine poisoning. Clinical and pharmacological considerations and treatment". Drug Safety. 6 (4)
Contamination - Injuries; Poisoning". Merck Manuals Professional Edition. Retrieved 26 December 2022. Rothblum-Oviatt C, Wright J, Lefton-Greif MA, McGrath-Morrow SA, Crawford TO, Lederman HM (November 2016). "Ataxia telangiectasia: a review". Orphanet Journal of Rare Diseases. 11 (1): 159. doi:10.1186/s13023-016-0543-7.
PMC5123280. PMID27884168.^ Crawford JR, Say D (March 2013). "Vitamin B12 deficiency presenting as acute ataxia". BMJ Case Reports. 2013: bcr2013008840. doi:10.1136/bcr-2013-008840. doi:10.11
in elderly dementia patients and control subjects". Journal of Geriatric Psychiatry and Neurology. 18 (1): 3338. doi:10.1177/0891988704272308. PMID15681626. S2CID29983253.^ Qudsiya Z, De Jesus O (2022). "Subacute Combined Degeneration of the Spinal Cord". StatPearls. Treasure Island (FL): StatPearls Publishing. PMID32644742. Retrieved
17 July 2022. Victor M, Ropper AH, Adams RD, Samuels M (2009). Adams and Victor's Principles of Neurology (Ninthed.). McGraw-Hill Medical. pp.7888. ISBN 978-0-07-149992-7. Pavan MR, Deepak M, Basavaprabhu A, Gupta A (2012). "Doctor i am swaying An interesting case of ataxia". Journal of Clinical and Diagnostic Research. Archived from
 the original on 8 May 2014. Retrieved 2 May 2013. Spinazzi M, Angelini C, Patrini C (May 2010). "Subacute sensory ataxia and optic neuropathy with thiamine deficiency". Nature Reviews. Neurology. 6 (5): 288293. doi:10.1038/nrneurol.2010.16. PMID20308997. S2CID12333200. Sqhirlanzoni A, Pareyson D, Lauria G (June 2005). "Sensory neuron
diseases". The Lancet. Neurology. 4 (6): 349361. doi:10.1016/S1474-4422(05)70096-X. PMID15907739. S2CID35053543. Moeller JJ, Macaulay RJ, Valdmanis PN, Weston LE, Rouleau GA, Dupr N (September 2008). "Autosomal dominant sensory ataxia: a neuroaxonal dystrophy". Acta Neuropathologica. 116 (3): 331336. doi:10.1007/s00401-008-
0362-6. PMID18347805. S2CID22881684. Jarius S, Wildemann B (September 2015). "'Medusa-head ataxia': the expanding spectrum of Purkinje cell antibodies in autoimmune cerebellar ataxia. Part 1: Anti-mGluR1, anti-Homer-3, anti-Sj/ITPR1 and anti-CARP VIII". Journal of Neuroinflammation. 12 (1): 166. doi:10.1186/s12974-015-0356-y.
PMC4574226. PMID26377085. Jarius S, Wildemann B (September 2015). "'Medusa head ataxia': the expanding spectrum of Purkinje cell antibodies in autoimmune cerebellar ataxia. Part 2: Anti-PKC-gamma, anti-GluR-delta2, anti-Ca/ARHGAP26 and anti-VGCC". Journal of Neuroinflammation. 12 (1): 167. doi:10.1186/s12974-015-0357-x.
PMC4574118. PMID26377184. Jarius S, Wildemann B (September 2015). "'Medusa head ataxia': the expanding spectrum of Purkinje cell antibodies in autoimmune cerebellar ataxia. Part 3: Anti-Yo/CDR2, anti-Tr/DNER, other antibodies, diagnostic pitfalls, summary and outlook". Journal of Neuroinflammation. 12 (1): 168.
doi:10.1186/s12974-015-0358-9. PMC4573944. PMID26377319. Scientific Reports. 9 (1): 16406. Bibcode:2019NatSR...916406S. doi:10.1038/s41598-019-52563-1. PMC6848138.
PMID31712561. Hermaszewski RA, Rigby S, Dalgleish AG (November 1991). "Coeliac disease presenting with cerebellar degeneration". Postgraduate Medical Journal. 67 (793): 10231024. doi:10.1136/pgmj.67.793.1023. PMC2399130. PMID1775412. Lv M, Yang X, Zhou X, Chen J, Wei H, Du D, et al. (7 September 2022). "Gray matter volume of
cerebellum associated with idiopathic normal pressure hydrocephalus: A cross-sectional analysis". Frontiers in Neurology. 13: 922199. doi:10.3389/fneur.2022.922199. PMC9489844. PMID36158963.^ Parvez MS, Ohtsuki G (March 2022). "Acute Cerebellar Inflammation and Related Ataxia: Mechanisms and Pathophysiology". Brain Sciences. 12 (3):
367. doi:10.3390/brainsci12030367. PMC8946185. PMID35326323. Sait H, Moirangthem A, Agrawal V, Phadke SR (June 2022). "Autosomal recessive spinocerebellar ataxia-20 due to a novel SNX14 variant in an Indian girl". American Journal of Medical Genetics. Part A. 188 (6): 19091914. doi:10.1002/ajmg.a.62701. PMID35195341.
S2CID247058153.^ Langridge B, Phillips E, Choi D (August 2017). "Chiari Malformation Type 1: A Systematic Review of Natural History and Conservative Management". World Neurosurgery. 104: 213219. doi:10.1016/j.wneu.2017.04.082. PMID28435116.^ Parviz M, Vogel K, Gibson KM, Pearl PL (November 2014). "Disorders of GABA metabolism
SSADH and GABA-transaminase deficiencies". Journal of Pediatric Epilepsy. 3 (4): 217227. doi:10.3233/PEP-14097. PMC4256671. PMID25485164.^ Walshe JM. Clarke CE, Nicholl DJ (eds.). "Wilson's Disease" (PDF). Birmingham Movement Disorders Coursebook. Archived from the original (PDF) on 10 September 2011.^ Ortiz JF, Morillo Cox, Tambo
W. Eskander N. Wirth M. Valdez M. et al. (November 2020), "Neurological Manifestations of Wilson's Disease: Pathophysiology and Localization of Each Component", Cureus, 12 (11): e11509, doi:10.7759/cureus, 11509. PMC7744205. PMID33354453. A Haldeman-Englert C. "Wilson's disease PubMed Health", PubMed Health, Archived from the
original on 27 July 2014. Giuffr M, Gazzin S, Zoratti C, Llido JP, Lanza G, Tiribelli C, et al. (December 2022). "Celiac Disease and Neurological Manifestations: From Gluten to Neuroinflammation". International Journal of Molecular Sciences. 23 (24): 15564. doi:10.3390/ijms232415564. PMC9779232. PMID36555205. a b c Mitoma H, Adhikari K,
Aeschlimann D, Chattopadhyay P, Hadjivassiliou M, Hampe CS, etal. (April 2016). "Consensus Paper: Neuroimmune Mechanisms of Cerebellum (Review). 15 (2): 213232. doi:10.1007/s12311-015-0664-x. PMC4591117. PMID25823827. Sapone A, Bai JC, Ciacci C, Dolinsek J, Green PH, Hadjivassiliou M, etal. (February 2012).
 "Spectrum of gluten-related disorders: consensus on new nomenclature and classification". BMC Medicine (Review). 10: 13. doi:10.1186/1741-7015). "Gluten-related disorders: gluten ataxia". Digestive Diseases (Review). 33 (2): 264268.
doi:10.1159/000369509. PMID25925933. S2CID207673823.^ Hadjivassiliou M, Graus F, Honnorat J, Jarius S, Titulaer M, Manto M, etal. (August 2020). "Diagnostic Criteria for Primary Autoimmune Cerebellar Ataxias". Cerebellum. 19 (4): 605610.
doi:10.1007/s12311-020-01132-8. PMC7351847. PMID32328884. Manto M, Mitoma H (April 2024). "Immune Ataxias: The Continuum of Latent Ataxia, Primary Ataxia and Clinical Ataxia". Journal of Integrative Neuroscience. 23 (79): 79. doi:10.31083/j.jin2304079. PMID38682229. Forrest MD, Wall MJ, Press DA, Feng J (December 2012). "The
sodium-potassium pump controls the intrinsic firing of the cerebellar Purkinje neuron". PLOS ONE. 7 (12): e51169. Bibcode:2012PLoSO...751169F. doi:10.1371/journal.pone.0051169. PMC3527461. PMID23284664. Forrest MD (December 2014). "The sodium-potassium pump is an information processing element in brain computation". Frontiers in
Physiology. 5 (472): 472. doi:10.3389/fphys.2014.00472. PMC4274886. PMID25566080. PMID25566080.
(2017). "Pathogenic Roles of Glutamic Acid Decarboxylase 65 Autoantibodies in Cerebellar Ataxias". Journal of Immunology Research. 2017: 2913297. doi:10.1155/2017/2913297. PMC5366212. PMID28386570.^ Manto M, Honnorat J, Hampe CS, Guerra-Narbona R, Lpez-Ramos JC, Delgado-Garca JM, etal. (2015). "Disease-specific monoclonal
antibodies targeting glutamate decarboxylase impair GABAergic neurotransmission and affect motor learning and behavioral functions". Frontiers in Behavioral functions and defect motor learning and behavioral functions. Frontiers in Behavioral functions and defect motor learning and behavioral functions and defect motor learning and behavioral functions.
Therapeutic Challenges". Current Neuropharmacology. 17 (1): 3358. doi:10.2174/1570159X16666180917105033. PMC6341499. PMID30221603. Mitoma H, Honnorat J, Yamaguchi K, Manto M (July 2020). "Fundamental Mechanisms of Autoantibody-Induced Impairments on Ion Channels and Synapses in Immune-Mediated Cerebellar Ataxias".
International Journal of Molecular Sciences. 21 (14): E4936. doi:10.3390/jjms21144936. PMC6341499. PMID32668612. Mitoma H, Manto M, Hadjivassiliou M (January 2021). Immune-Mediated Cerebellar Ataxias: Clinical Diagnosis and Treatment Based on Immunological and Physiological Mechanisms. Journal of Movement Disorders. 14 (1):
1028. doi:10.14802/jmd.20040. PMC7840241. PMID33423437. Hirano T (2013). "Long-term depression and other synaptic plasticity in the cerebellum". Proceedings of the Japan Academy. Series B, Physical and Biological Sciences. 89 (5): 183195. doi:10.2183/pjab.89.183. PMC3722574. PMID23666089. Morton SM, Bastian AJ (December 2009).
"Can rehabilitation help ataxia?". Neurology. 73 (22): 18181819. doi:10.1212/WNL.0b013e3181c33b21. PMID19864635. S2CID5481310.^ a b Trujillo-Martn MM, Serrano-Aguilar P, Monton-Alvarez F, Carrillo-Fumero R (June 2009). "Effectiveness and safety of treatments for degenerative ataxias: a systematic review". Movement Disorders. 24 (8):
11111124. doi:10.1002/mds.22564. PMID19412936. S2CID11008654. A Ramirez-Zamora A, Zeigler W, Desai N, Biller J (April 2015). "Treatable causes of cerebellar ataxia". Movement Disorders. 30 (5): 614623. doi:10.1002/mds.26158. PMID25757427. S2CID9560460. A Manto M, Gandini J, Feil K, Strupp M (February 2020). "Cerebellar ataxias: an
update". Current Opinion in Neurology. 33 (1): 150160. doi:10.1097/WCO.00000000000000774. PMID31789706. S2CID208538266. Perlman SL (November 2006). "Ataxias". Clinics in Geriatric Medicine. 22 (4): 85977, vii. doi:10.1016/j.cger.2006.06.011. PMID17000340. a b Ilg W, Synofzik M, Brtz D, Burkard S, Giese MA, Schls L (December 2009).
 "Intensive coordinative training improves motor performance in degenerative cerebellar disease". Neurology. 73 (22): 18231830. doi:10.1212/WNL.0b013e3181c33adf. PMID19864636. S2CID2087750.^ Martin CL, Tan D, Bragge P, Bialocerkowski A (January 2009). "Effectiveness of physiotherapy for adults with cerebellar dysfunction: a systematic
review". Clinical Rehabilitation. 23 (1): 1526. doi:10.1177/0269215508097853. PMID19114434. S2CID25458915. Schatton C, Synofzik M, Fleszar Z, Giese MA, Schls L, Ilq W (June 2017). "Individualized exergame training improves postural control in advanced degenerative spinocerebellar ataxia: A rater-blinded, intra-individually controlled trial".
Parkinsonism & Related Disorders. 39: 8084. doi:10.1016/j.parkreldis.2017.03.016. PMID28365204. a b Richards L, Senesac C, McGuirk T, Woodbury M, Howland D, Davis S, et al. (2008). "Response to intensive upper extremity therapy by individuals with ataxia from stroke". Topics in Stroke Rehabilitation. 15 (3): 262271. doi:10.1310/tsr1503-262.
PMID18647730. S2CID207260777.^ Schmitz-Hbsch T, Tezenas du Montcel S, Baliko L, Boesch S, Bonato S, Fancellu R, etal. (May 2006). "Reliability and validity of the International Cooperative Ataxia Rating Scale: a study in 156 spinocerebellar ataxia patients". Movement Disorders. 21 (5): 699704. doi:10.1002/mds.20781. PMID16450347.
S2CID28633679. Schmitz-Hbsch T, du Montcel ST, Baliko L, Berciano J, Boesch S, Depondt C, etal. (June 2006). "Scale for the assessment and rating of ataxia: development of a new clinical scale". Neurology. 66 (11): 17171720. doi:10.1212/01.wnl.0000219042.60538.92. PMID16769946. S2CID24069559. a b Notermans NC, van Dijk GW, van der
Graaf Y, van Gijn J, Wokke JH (January 1994). "Measuring ataxia: quantification based on the standard neurological examination". Journal of Neurologic Examination". Online physical exam teaching assistant. The UF College of
Medicine Harrell Center. Archived from the original on 18 March 2012. Retrieved 7 May 2012. Natural disorders. CNS Spectrums. 12 (7): 527536. doi:10.1017/S1092852900021271. PMID17603404. S2CID45201083.Perlman S (1998). "Hereditary Ataxia"
Overview (last revision 2012)". In Pagon RA, Bird TD, Dolan CR, Stephens K, Adam MP, Bird TD (eds.). All GeneReview. University of Washington, Seattle. PMID20301317.Manto M, Gruol D, Schmahmann J, Koibuchi N, Rossi F (2013). Handbook of the Cerebellum and Cerebellum and Cerebellum and Cerebellum Creation (2013). Handbook of the Cerebellum and Cerebellum and Cerebellum and Cerebellum and Cerebellum Creation (2013).
"Cerebellar ataxia but normal neuroimaging: now what?". Scivision. National Ataxia Foundation (USA) Retrieved from The treatment for ataxia can vary depending on exactly what type of ataxia you have. It's sometimes possible to treat the underlying cause of the condition so it improves or stops getting worse, but in most cases this isn't possible and
you'll have treatment to relieve your symptoms. You'll usually be cared for by a group of healthcare professionals called amultidisciplinary team (MDT), who willwork with you to come up with a care plan. Your MDT will probably include a neurologist, physiotherapist and specialist nurse, among others. Your care plan will playan important part in the
management of your condition. Your physical, social and psychological needs will be assessed, and the plan will also address any futureneeds you may be seen in a specialist ataxia
centre. Treatments for the various symptoms of ataxia are discussed in the following sections, although you may not experience all of the problems described. Speech and language therapy are therapy are therapy and swallowing problems described.
(dysphagia). The therapist will be able to advise youabout how to make your voice sound clearer. For example, they may suggest: changing your posture to improve the quality of your voice sound clearer. For example, they may suggest: changing your posture to improve your
speechIf your speech gets worse, you may want to consider using speaking aids such as a laptop computer connected to a voice synthesiser. Your therapist will be able to teach you exercises to stimulate the nerves used to trigger your swallowing reflex and
strengthen the muscles used when swallowing. You may also be referred to adject to your gradual loss of mobility and develop new skills
you can use to carry out daily activities. An occupational therapist may be able to teach you how to use a wheelchair and other mobility devices. They can also advise you about modifications you can make to your house, such as installing guide rails or a stair lift, to help make your life easier. Physiotherapy f you have ataxia, physiotherapy can help you
maintain the use of your arms and legs, and prevent your muscles weakening or getting stuck in one position (contractures). A physiotherapist will be able to teach you a number of physical exercises you can do every day to help strengthen and stretch your muscles. They may also be able to recommend walking aids to help you get around. Muscle
problemsIf you're experiencing muscle spasms, cramps and stiffness, muscle relaxant medication such as baclofen or tizanidinemay be used to control these symptoms. If these aren't effective, an injection of botulinum toxin (Botox) may be given. This works by blocking the signals from yourbrain to the affected muscles. The effects of the injection will
usually last for up to 3 months. Bladder problems, such as urinary urgency or, more rarely, urinary incontinence, sometimes affect people with ataxia. In some cases, bladder problems can be controlled using a number of self care techniques, such as limiting fluid intake during the day, planning regular trips to the toilet, and avoiding
drinks known to stimulate urine production, such as caffeine and alcohol. Some people may also require a type of medication known as antimuscarinic. This will help relax the bladder may also help. Others may find it difficult to empty their bladder
completelywhen they go to the toilet. This can lead to small amounts of urine leaking out later on. In such cases, it may be necessary to insert a small tube known as aurinary catheter into the bladder to help drain the urine. Eye problems are common in some cases of ataxia. Oscillopsia is an eye problemcaused by involuntary movement of
the eyes from side to side or up and down. It can cause visual disruption, making tasks such as reading difficult. This can sometimes be treated using medication such as gabapentin to control the muscles that move the eyes. Some people with ataxia experience double vision, where you see 2 images of a single object. It may be possible to treat this by
```

attaching a wedge-shaped piece of glass or plasticcalled a prism to your glasses. Erectile dysfunction. Thiscan often be treated using a group of medications known as phosphodiesterase-5 (PDE-5) inhibitors, such assildenafil (sold as Viagra). These help increase blood flow to the penis. Read more about treating erectile dysfunction. Fatigue Many people with neurological conditions such as ataxia report feeling extremely tired and lethargic (lacking in energy). It's thought this is partly caused by disturbed sleepand the physical efforts of having to cope with the loss of co-ordination. A physiotherapist may be able to help you cope with fatigue better. Nerve pain better. Nerve pain. The medical term for nerve pain is neuropathic pain, which is often

experienced as a burning, achingor shooting pain, or sometimes tingling, in certain parts of the body. Traditional painkillers such asparacetamol or ibuprofen aren't usually effective in treating neuropathic pain, so you may be prescribed a number of medications, such as amitriptyline, gabapentin or pregabalin. Read more about treating neuropathic pain. Cardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyopathy(2ardiomyop

Is cerebellar ataxia a disability. Can cerebellar ataxia be reversed. Is cerebellar ataxia permanent. How is cerebellar ataxia diagnosed. Does cerebellar ataxia get worse. Is cerebellar ataxia fatal. Cerebellar ataxias. Cerebellaire ataxie. How is cerebral ataxia diagnosed.