

Atlanto-Axial Instability screening information sheet

All participants with Down's syndrome who wish to participate in athletics activity (including high jump, long jump, triple jump, pole vault, middle and long distances over 1500m), are required to be screened under the following guidelines.

These guidelines have been prepared to assist coaches to understand the medical screening requirements for athletes with Down's syndrome. The aim of the screening is to provide access to athletics for everyone who can benefit from involvement in this sport and who are at no greater risk than other athlete. All athletes with Down's syndrome must have approval from England Athletics before any participation in **high jump, long jump, triple jump, pole vault, middle and long distance over 1500m** is permitted.

Participation in athletics activities by people with Down's syndrome is permitted, subject to the following provisos:

- Parent/Guardian's consent is obtained (under 16's)
- There is no evidence of progressive Myopathy in the person concerned
- That neck flexion to allow the chin to rest on the chest is possible.
- That the person has good head/neck muscular control.

Screening must be undertaken by a qualified medical practitioner. Those who are eligible to undertake the necessary tests include General Practitioners; Orthopaedic or Paediatric Consultants; School Medical Officers/Doctors; Chartered Physiotherapists.

Neck Instability (Craniovertebral Instability)

'Neck instability', 'Craniovertebral instability' and 'Cervical spine instability' are umbrella terms which cover both atlanto-axial instability and atlanto-occipital instability.

In people with Down's syndrome the ligaments which stabilise the joints tend to be particularly lax and this, combined with low muscle tone, results in an unusually wide range of movement at some joints. As well as affecting the ordinary limb joints, for instance hips and ankles, laxity can also affect the complex set of joints between the head and upper neck vertebrae. One of the functions of the vertebrae in the spine is to protect the spinal cord, a thick bundle of nerves, which runs inside the spine from the base of the brain to the pelvis. The main concern about neck instability is that this increases the risk of spinal cord damage, especially if vertebrae get misaligned.

The greatest potential for excess movement of one vertebra on its neighbour and possible misalignment is right at the top of the spinal column, at the atlanto-axial joint which lies between the top first vertebra (atlas or C1) which supports the base of the skull and the second vertebra (axis or C2), or less often at the atlanto-occipital joint between the atlas vertebra and the base of the skull (see diagram)

Fig 1. There is movement at these joints whenever you nod or shake your head.

The axis vertebra (C2) has a central bony spur known as the odontoid peg which passes upwards from the body of the axis into the front of the spinal canal (carrying the spinal cord) in the atlas or C1. If the atlas moves too much on the axis, the odontoid peg is well placed to damage the spinal cord. (see diagram)

Fig 2 shows, in the middle picture, that when the atlas and axis are firmly bound to each

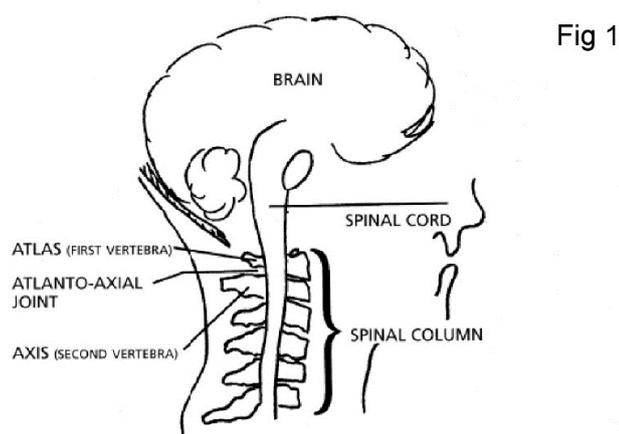


Fig 1

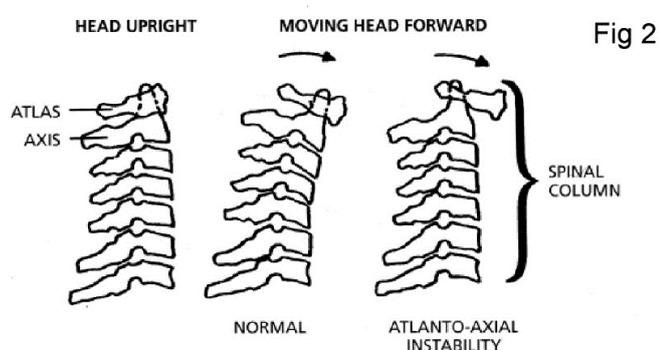


Fig 2

other both move together when the neck bends forward. The diagram on the right shows the situation when the ligaments binding the joint are slack. Here the atlas moves forward but fails to carry the axis with it thus narrowing the spinal canal through which the spinal cord is passing. This is sometimes referred to as atlantoaxial instability or AAI. Instability and movement can also occur between the skull and first cervical vertebra so the terms neck instability, craniovertebral instability (CVI) or cervical spine instability (CSI) are now more commonly used.

What problems can be caused by neck instability?

Damage to the spinal cord in the neck can happen to anyone with or without Down's syndrome, and can cause a range of problems from mild pain or a stiff neck to paralysis in extreme cases. This can either happen suddenly as a result of a sudden shift within the joint (for example whiplash causing dislocation), or more gradually because of day-to-day pressure on the spinal cord as the neck moves. Gradual onset of symptoms due to long term instability or degenerative arthritic changes is more common in adults with Down's syndrome.

What to look out for

Fortunately, most people have mild warning symptoms of problems in the upper spine before dislocation and long term damage occurs. It is, therefore, important that **ALL** carers and professionals working with people with Down's syndrome are educated about warning signs of neck instability so that preventative action can be taken. If someone you care for is showing any of these signs, they may have a problem with neck instability and should be seen urgently by a doctor:

- Pain anywhere along the neck.
- A stiff neck which doesn't get better quickly.
- Unusual head posture ("wry neck" or torticollis).
- Alteration in the way a person walks so they may appear unsteady.
- Deterioration in a person's ability to manipulate things with his/her hands.

Athlete details:

Name:		
England Athletics URN:		
Email Address:		
Date of birth:	Male / Female	Ms / Mrs / Mr / Miss
Address:		Postcode:
Athletics Club:		Telephone:

If the onset of symptoms is sudden an emergency appointment is needed. If there is no obvious alternative explanation for these symptoms they may be related to neck instability causing nerve damage, and an X-ray in these circumstances, along with specialist referral to either.

Coach details:

Name:	
England Athletics URN:	

Screening

A qualified medical practitioner or chartered physiotherapist must complete the following tests and questions (delete as appropriate):

1. Does the person show evidence of progressive Myopathy?
Yes / No
2. Does the person have poor head/neck muscular control?
Yes / No
3. Does the person's neck flexion allow the chin to rest on their chest?
Yes / No

If an athlete has a positive test (Yes) for any of the first two questions or a negative test (No) for question three, the individual will be excluded from participation in certain activities. Please contact England Athletics Inclusion Manager for further details disability@englandathletics.org

Name:	
Designation:	
Address:	Practice Stamp:
Signature:	

For England Athletics Use:

Received by England Athletics

Date:

Signature:

Name:

Approved:

YES

NO

(Tick appropriate)

Action Required/ Notes:

--

Contact Down's Syndrome Association

Postal Address: Down's Syndrome Association
National Office
Langdon Down Centre,
2a Langdon Park, Teddington,
Middlesex, TW11 9PS

Telephone: 0333 1212 300
Email: info@downs-syndrome.org.uk
Website: www.downs-syndrome.org.uk

Contact England Athletics

Postal Address: England Athletics, Athletics House,
Alexander Stadium, Walsall Road, Perry Barr,
Birmingham, B42 2BE

Telephone: 0121 347 6543
Email: disability@englandathletics.org
Website: <https://www.englandathletics.org>

Reference

Further references and information can be found at the website of the Down's Syndrome.

Medical Interest Group <https://www.dsmig.org.uk/information-resources/by-topic/cervical-spine-disorderscraniovertebral-instability/>