Ministry of Defence

Air Command Secretariat
Spitfire Block
Headquarters Air Command
Royal Air Force
High Wycombe
Buckinghamshire
HP14 4UE

Our Ref: 2018-15968

[redacted]

Email: [redacted]

14 January 2019

Dear [redacted]

Thank you for your email of 14 December 2018 requesting the following information:

> *On the form titled "Medical conditions that preclude entry" which is published by the RAF, the musculoskeletal disorders section states:*
> *1. "Most spinal abnormalities"*
> *2. "Most spinal operations"*
>
> *I would like to find out the conditions that would be included within the disorders stated above.*
>
> *Furthermore, related to the disorders above, I would like to know the guidance given to medical examiners when encountering an initial/entry officer medical examination with an applicant that has corrective scoliosis surgery via vertibrate fusion but is asymptomatic.*

I am treating your correspondence as a request for information under the Freedom of Information Act 2000 (FOIA).

A search for the information has now been completed within the Ministry of Defence, and I can confirm that information in scope of your request is held. Please find this information attached.

Information on the medical entry standards for joining the Royal Air Force (RAF) are outlined in Joint Service Publication 950. Information on musculoskeletal entry standards to the RAF, specifically relating to spinal conditions, is contained in leaflet 6-7-7 Annex K which I have attached to this reponse.

Also attached is an extract from the Royal Navy and Royal Air Force Military Medical Examiner Manual for guidance on musculoskeletal system examination.

If you are not satisfied with this response or wish to complain about any aspect of the handling of your request, then you should contact me in the first instance. If informal resolution is not possible and you are still dissatisfied then you may apply for an

independent internal review by contacting the Information Rights Compliance Team, Ground Floor, MOD Main Building, Whitehall, SW1A 2HB (e-mail CIO-FOI-IR@mod.uk). Please note that any request for an internal review must be made within 40 working days of the date on which the attempt to reach informal resolution has come to an end.

If you remain dissatisfied following an internal review, you may raise your complaint directly to the Information Commissioner under the provisions of Section 50 of the Freedom of Information Act. Please note that the Information Commissioner will not normally investigate your case until the MOD internal review process has been completed. The Information Commissioner can be contacted at: Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF. Further details of the role and powers of the Information Commissioner can be found on the Commissioner's website at https://ico.org.uk/.

Yours sincerely,

[Original signed]

Air Director Resources Secretariat

1. **MUSCULOSKELETAL SYSTEM EXAMINATION** - A formal and comprehensive clinical and functional examination of the musculoskeletal system is essential. It is also suggested however, that MMEs develop their own technique to undertake this part of the assessment. Visually inspecting an undressed candidate, whilst they move about the examination room, and undertake the dynamic musculo-skeletal assessment test will often reveal abnormalities that a MME can then focus on, to clarify. This then allows unnecessary examination of obviously normal parts of the candidate to be avoided.

2. **Upper limbs**. For the Shoulder, Elbow, Wrist and hands, confirm symmetry, normal power, and full active and passive movement.

3. **Lower limbs**. Examination of the lower limbs is best performed with the candidate lying on the examination couch for hips and knees, and sitting with the legs hanging over the couch for ankles and feet.

    a. **General** - Confirm equal length of the legs.
    b. **Hips** - Confirm normal power, normal and symmetrical flexion, extension, adduction and straight leg raise, and with the knee and hip flexed at 90°, normal internal and external rotation.
    c. **Knees**.
        i. *Inspection* - Confirm symmetrical quadriceps muscle mass.
        ii. *Palpation* - Confirm the absence of effusion and joint line and tibial tubercle tenderness.
        iii. *Movement* - Confirm normal power, symmetrical and normal flexion and extension and absence of crepitus. With the leg in slight extension confirm the integrity of the medial and lateral collateral ligaments. Confirm the integrity of the anterior and posterior cruciate ligaments (posterior sag, anterior drawer test, Lachman's test), and of the menisci by McMurray's test. Finally, patellar apprehension testing should be performed.
    d. **Ankle** - Confirm the absence of Achilles tendon tenderness or thickening. Confirm normal power, full and symmetrical movement. Perform the ankle anterior drawer test to demonstrate integrity of the anterior talo-fibular ligament.
    e. **Feet and toes** - Confirm normal power, normal and symmetrical movement of the midfoot and fore-foot joints. Confirm normal movement of all toes and exclude the presence of deformities (club feet, flat feet, claw toes, scars and hard corns).
    f. **Spine** - The spine is best examined with the candidate standing and is graded under the L section of the PULHHEEMS system.
        i. *Cervical spine* - Confirm normal and symmetrical flexion, extension, lateral flexion and rotation.
        ii. *Thoracic spine* - Exclude kyphosis and scoliosis and confirm full thoracic rotation.

iii. *Lumbo-sacral spine* - Confirm flexion and a smooth spinal curve without bending the knees, extension, lateral flexion and rotation.
iv. *Coordination* - Confirm normal spinal and lower limb coordination.

4. **DYNAMIC MUSCULOSKELETAL ASSESSMENT TESTING** – this testing is to assist the examiner in determining if the candidate has the combined strength, co-ordination, and range of movements in the upper and lower limbs, that is suited to a military environment and complements the physical examination findings. The candidate is asked to do the following:

    a. **Press-ups**. The candidates should be asked to perform 3 or 4 press-ups: males – knees off floor, straight back, at shoulder width with the palms flat on the floor. The rise must be from nose-on-floor to elbows fully extended. Observation must ensure that the elbows are at the same level on each side and that there is no asymmetry of the upper limbs or thorax. If necessary, females may perform the exercise using the knees as the fulcrum point. Use this to assess for winged scapula.
    b. **Normal gait**. Gait will already have been observed as the candidate enters the examination room but should be confirmed by taking normal steps across the room.
    c. **Toe walking**. The candidate should walk across the room on the tips of their toes with the feet fully extended.
    d. **Heel walking**. The candidate should walk across the room on the heels of their feet.
    e. **Walking on the outer border of the feet**. The candidate should walk across the room on the outer borders of the feet.
    f. **Duck walking**. The candidate takes 5-6 steps whilst squatting with the knees and hips flexed and the ankles fully dorsiflexed.
    g. **Heel raises**. 5 single heel raises should be performed with both arms outstretched and fingertips only in contact with the wall. The other leg is held with the knee flexed to 90°.

Extract from JSP950 Iflt 6-7-7 Annex K, Tri-Service Musculoskeletal Entry Standards

Spinal conditions

29. **General.** Normal structure and function of the spine is an essential requirement for military service. The following spinal conditions must be given careful consideration.

30. **Structural abnormality of the spine**[1]**.** Candidates with minimally abnormal scoliosis[2], kyphosis or lordosis with no associated back pain with full and free movement of all spinal segments (cervical, thoracic and lumbar) may be graded L2. Candidates with scoliosis or other curvature requiring treatment, that is associated with an on-going disease process/neuromuscular or neurological dysfunction or back pain are to be graded P8U8 or P8L8 as appropriate[3].

31. **Scheuermann's disease.** Candidates without symptoms who have achieved 3 months activity comparable with military training (especially load-carrying ability) are to be referred for specialist assessment. Candidates who are symptomatic are graded P8L8.

32. **Spondylolysis and spondylolisthesis.** All candidates who have been diagnosed with these conditions (whatever the degree of slip for spondylolisthesis) but are now asymptomatic during activity comparable with military training for a minimum of 3 months are to be referred to single-Service Occupational Physician responsible for the selection of recruits. Candidates who are symptomatic are graded P8L8.

33. **Spina bifida occulta.** This condition can only be diagnosed with imaging. Candidates with an incidental finding, without history of symptoms and in the absence of other abnormality may be graded L2. Candidates with either present or previous symptoms are to be graded P8L8.

34. **Spinal fracture.** Candidates with any history of spinal fracture (including wedge fractures of the vertebral body but excluding resolved spinous and transverse process fractures) are to be graded P8L8[4].

35. **Previous spinal surgery.** Candidates with a history of any spinal surgery are normally graded P8L8. However, candidates who have had a single-level discectomy (eg for sequestered disc) may be graded L2 subject to referral to single-Service Occupational Physician responsible for the selection of recruits providing the candidate is at least 2 years post-operation, is asymptomatic when undertaking activity comparable with military service

---

[1] No symptomatic structural abnormality fares well in military training.

[2] Adams' forward bend test (forward bending at the waist, viewed from anterior, posterior, and lateral aspects) provides a good prospective for identifying thoracic, thoracolumbar, or lumbar paraspinal and thoracic cavity prominences (which result from abnormal vertebral rotation as well as from a combination of abnormal spinal curvature in the coronal and sagittal planes). Bending forward accentuates paraspinal and rib prominences, which is suggestive of scoliosis. This is the hallmark examination finding that leads to a suspicion of scoliosis during screening evaluation. A positive result is observation of an asymmetric paraspinal prominence. The presence of an asymmetric scapular prominence may suggest an upper thoracic curve. A scoliometer is used to quantify right- and left- sided asymmetries (paraspinal prominences) identified on Adams' forward bend test. A positive result is one of >5° at any paraspinal prominence (thoracic or lumbar). Patients with scoliometer values of 5° or greater correlate with Cobb angle measurements of at least 10° which represents a commonly agreed-upon cut-off point used to direct treatment decisions. http://bestpractice.bmj.com/best-practice/monograph/979/diagnosis/step-by-step.html (accessed Feb 16).

[3] Altered biomechanics will affect load-carrying ability.

[4] DCA Orthopaedics: Approximately 30% of individuals with a wedge compression fracture will become symptom free in 2-3 months with no residual disability and no risk of late complications; another 40% will have occasional back pain when the back is stressed but this will not affect function; the remaining 30% will continue with back pain that will restrict any heavy work. However, the prognosis is not entirely proportional to the degree of deformity. The reason for this is not established but a change in the general shape of the spine affects its mechanical performance and such candidates are likely to suffer recurrent episodes of back pain.

and has been doing so for at least 3 months and there is no evidence of osteo-arthritis on imaging.

36. **Cervical spine.** Candidates with previous non-bony neck injury (eg whiplash or muscular sporting injury) may be graded U2 provided they are asymptomatic for at least 12 months including exercise comparable with military training for 3 months. Those with any symptoms are to be graded P8U8.

37. **Back pain.** There is strong evidence[5] that a history of back pain is the best predictor of future problems - most notably, frequency and duration of symptoms, time since last episode, referred pain, surgery and time off work.

a. Candidates with a single episode of simple acute back pain with no radiation which has responded to treatment, without structural cause in the previous 12 months and who are now asymptomatic with activity comparable with military training for a minimum of 6 months may be graded P2 provided the triggering event indicates that the individual is not at undue risk of recurrence.

b. Candidates with a history of three or more episodes of back pain are to be graded P8L8.

c. Candidates with any episode of chronic back pain (at least 12 weeks) are graded P8L8

d. Candidates with a history of sciatic pain with or without back pain are graded P8L8

[5] a. Occupational Health Guidelines for the Management of Low Back Pain 2000 - Evidence Review and Recommendations. Waddell, G, Burton, K. http://www.kendallburton.com/Library/Resources/Occupational_Health_LBP_Guidelines_Ev%20idence_Review.pdf (accessed Feb 16). b. Acute low back pain: systematic review of its prognosis Pengel LHM, Herbert RD, Maher CG, Refshauge KM. BMJ 2003;327:323-7. c. Predicting who develops chronic low back pain in primary care: a prospective study. Thomas E, Silman AJ, Croft PR, Papageorgiou AC, Jayson MIV, Macfarlane GJ. BMJ 1999;318:1662-7.