Specialist Medical Review Council

Reasons for Decisions

Section 196W
Veterans' Entitlements Act 1986

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**Re: Statements of Principles Nos. 352 of 1995**
**Osteoarthrosis**
Matter No. 96/1
Request for review No 3

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The Specialist Medical Review Council ('the Review Council') established pursuant to Part X1B of the *Veterans' Entitlements Act 1986* ('the Act'), having reviewed the contents of the Statement of Principles numbered 352 of 1995 made under section 196B of the Act by the Repatriation Medical Authority (RMA) established under Part X1A of the Act, on 24 March 1997 declared

a) that it was of the view that the sound medical-scientific evidence available to the RMA at the time it made the Statement of Principles No 352 of 1995 was insufficient to justify the making of an amendment to that Statement of Principles;

b) that it recommended that the RMA further investigate repetitive impact microtrauma as a possible factor for the purposes of subsections 196B(2) and 196B(3) of the Act, having regard to the reasons for decision of the Review Council in its review of the above Statement of Principles, the information that was available to the RMA when it made those Statements together with any further information which has since become available to the RMA and which may become available between the date of the Declaration and the completion by the RMA of its investigation.

## FINDINGS ON MATERIAL QUESTIONS OF FACT

### Events giving rise to the review

2. On 3 October 1995, the Repatriation Medical Authority, under subsections 196B92) and (3) of the *Veterans' Entitlements Act 1986* (the Act), signed and therefore determined Statement of Principles, Instrument No. 352 of 1995. This Statement of Principles concerned osteoarthrosis.

3. In accordance with section 196D of the Act and sections 46A and 48 of the *Acts Interpretation Act 1901*, on 16 October 1995 this Statement of Principles was tabled in

both the House of Representatives and the Senate (House of Representatives Debates, Vol. 204 p.2155). The making of those instruments was notified in the Government Notices Gazette (No. GN40, 11 October 1995 p. 3840).

4. On 4 January 1996 a request (No.1 of 1996) was made under section 196Y of the Act by Mr John Elgar Beale for a review by the Specialist Medical Review Council of the contents of instrument 352 of 1995. The request was lodged with the Department of Veterans' Affairs.

5. On 17 January 1996 the Secretary of the Department of Veterans' Affairs advised the Specialist Medical Review Council and the Repatriation Medical Authority of the receipt of the application.

6. On 28 February 1996, in accordance with section 196ZB of the Act, the Review Council published a notice in the Gazette (No. GN8, 28 February 1996, p.767) stated that it intended to carry out a review of the information available to the Repatriation Medical Authority about osteoarthrosis, and inviting persons or organisations authorised under subsection 196ZA(1) of the Act to make written submissions to the Review Council.

7. Subsection 196W(3) of the Act provides that the Review Council may carry out a review only if the period within which the Statement of Principles may be disallowed under section 48 of *the Acts Interpretation Act 1901* has ended and the Statement of Principles has not been disallowed. The disallowance period ended upon the expiration of 29 November 1996 for the House of Representatives and 22 November 1995 in the Senate, this being the 15th sitting day after the tabling of those Statements of Principles in the respective Houses.. The Statement of Principles had not been disallowed.

**The Review Council**

8. The Specialist Medical Review Council is a body corporate established under section 196V of the Act and consists of such number of members as the Minister for Veterans' Affairs determines from time to time to be necessary for the proper exercise of the functions of the Review Council. The Minister must appoint one of the Councillors to be the Convener. When a review is undertaken of a Statement of Principles made by the Repatriation Medical Authority, the Review Council is constituted by between three and five councillors selected by the Convener. When appointing councillors the Minister is required to have regard to the branches of medical science expertise which would be necessary for deciding matters referred to the Review Council for review.

9. Professor Cohen AO, MD, FRACP was the Convener of the Review Council for this review. He is a former Chairman of the Committee of Presidents of Medical Colleges, a past President of the Royal Australasian College of Physicians as well as the Director of Postgraduate Medical Education at Sir Charles Gardiner Hospital.

10. Professor John Hart MBBS, FRACS, FAOrthA, FASMF FACSP (Hons) is the Senior Visiting Orthopaedic Surgeon at the Alfred Hospital in Melbourne as well as Chairman of the Australian Orthopaedics Association (Victorian Branch) including that Branches sub-committee on Trauma.

11. Professor Geoffrey Littlejohn (MD, MPH, MBBS (Hons), FRACP, FACRM is Director of Rheumatology and Deputy Director of the Centre for Inflammatory Diseases at the Monash Medical Centre, Melbourne and is a Clinical Associate Professor of Medicine at Monash University.

12. Professor Dennis Smith FRCP, FRACP, FACRM, FAFRM is the Foundation Professor of Rehabilitation at the University of Sydney, Director of Orthopaedic Rehabilitation Services at the Royal Rehabilitation Centre, Sydney and Director of Rehabilitation Medicine Services at Royal North Shore Hospital in Sydney and has been a Consultant in Rheumatology in the United Kingdom.

**The Legislation**

13. The legislative scheme for the making and review of Statements of Principles is set out in Parts XI A and XI B of the Act. Section 196B relevantly provides:

> 1)…….
>
> (2) If the Authority is of the view that there is sound medical-scientific evidence that indicates that a particular kind of injury, disease or death can be related to:
> (a) operational service rendered by veterans; or
> (b) peacekeeping service rendered by members of Peacekeeping Forces; or
> (c) hazardous service rendered by members of the Forces;
> the Authority must determine a Statement of Principles in respect of that kind of injury, disease or death setting out:
> (d) the factors that must as a minimum exist; and
> (e) which of those factors must be related to service rendered by a person;
> before it can be said that a reasonable hypothesis has been raised connecting an injury, disease or death of that kind with the circumstances of that service.
> Note 1: For "sound medical-scientific evidence" see subsection 5AB (2).
> Note 2: For "peacekeeping service", "member of a Peacekeeping Force", "hazardous service" and "member of the Forces" see subsection 5Q (1A).
> Note 3: For "factor related to service" see subsection (14).
>
> (3) If the Authority is of the view that on the sound medical-scientific evidence available it is more probable than not that a particular kind of injury, disease or death can be related to:
> (a) eligible war service (other than operational service) rendered by veterans; or
> (b) defence service (other than hazardous service) rendered by members of the Forces;
> the Authority must determine a Statement of Principles in respect of that kind of injury, disease or death setting out:
> (c) the factors that must exist; and
> (d) which of those factors must be related to service rendered by a person;
> before it can be said that, on the balance of probabilities, an injury, disease or death of that kind is connected with the circumstances of that service.
> Note 1: For "sound medical-scientific evidence" see subsection 5AB (2).
> Note 2: For "defence service" and "hazardous service" see subsection 5Q (1A).
> Note 3: For "factor related to service" see subsection (14).
>
> …
> (14) A factor causing, or contributing to, an injury, disease or death is **related to service** rendered by a person if:
> (a) it resulted from an occurrence that happened while the person was rendering that service; or
> (b) it arose out of, or was attributable to, that service; or
> (c) it resulted from an accident that occurred while the person was travelling, while rendering that service but otherwise than in the course of duty, on a journey:
> (i) to a place for the purpose of performing duty; or
> (ii) away from a place of duty upon having ceased to perform duty; or

(d) it was contributed to in a material degree by, or was aggravated by, that service; or

(e) in the case of a factor causing, or contributing to, an injury — it resulted from an accident that would not have occurred:
  (i) but for the rendering of that service by the person; or
  (ii) but for changes in the person's environment consequent upon his or her having rendered that service; or

(f) in the case of a factor causing, or contributing to, a disease — it would not have occurred:
  (i) but for the rendering of that service by the person; or
  (ii) but for changes in the person's environment consequent upon his or her having rendered that service; or

(g) in the case of a factor causing, or contributing to, the death of a person — it was due to an accident that would not have occurred, or to a disease that would not have been contracted:
  (i) but for the rendering of that service by the person; or
  (ii) but for changes in the person's environment consequent upon his or her having rendered that service.

14. The phrase 'sound medical-scientific evidence', is defined in section 5AB of the Act as follows:

5AB (1) ...
"sound medical-scientific evidence", in relation to a particular kind of injury, disease or death, has the meaning given by subsection (2).

(2) Information about a particular kind of injury, disease or death is taken to be **sound medical-scientific evidence** if:
(a) the information:
(i) is consistent with material relating to medical science that has been published in a medical or scientific publication and has been, in the opinion of the Repatriation Medical Authority, subjected to a peer review process; or
(ii) in accordance with generally accepted medical practice, would serve as the basis for the diagnosis and management of a medical condition; and
(b) in the case of information about how that kind of injury, disease or death may be caused — meets the applicable criteria for assessing causation currently applied in the field of epidemiology."

15. Section 196Y of Part X1B enables, inter alia, an organisation representing veterans to ask the Review Council to review the contents of a Statement of Principles.

16. Section 196W deals with the Review Council's functions and relevantly provides as follows:-

. …

(2) If the Council is asked under section 196Y to review:

(a) the contents of a Statement of Principles in respect of a particular kind of injury, disease or death; or
(b) a decision of the Repatriation Medical Authority not to determine a Statement of Principles under subsection 196B(2), or a Statement of Principles under subsection 196B(3), in respect of a particular kind of injury, disease or death;
subject to subsection (3), the Council must, for that purpose, carry out a review of all the information that was available to the Authority when it:
(c) determined, amended, or last amended, the Statement of Principles; or
(d) decided, or last decided, not to determine a Statement of Principles;
in respect of that kind of injury, disease or death.

(3) If the Council has been asked to review the contents of a Statement of Principles, the Council may carry out a review under subsection (2) only if:

(a) the period within which the Statement of Principles may be disallowed under section 48 of the *Acts Interpretation Act 1901* has ended; and

(b) the Statement of Principles has not been disallowed.

(4) If after carrying out the review, the Council is of the view that there is sound medical-scientific evidence on which the Authority could have relied:

(a) to amend the Statement of Principles in force in respect of that kind of injury, disease or death; or

(b) to determine a Statement of Principles under subsection 196B (2), or a Statement of Principles under subsection 196B (3), in respect of that kind of injury, disease or death;

the Council must make a declaration in writing stating its views, setting out the evidence in support and:

(c) directing the Authority to amend the Statement of Principles, or determine a Statement of Principles (as the case may be), in accordance with the directions given by the Council; or

(d) remitting the matter for reconsideration in accordance with any directions or recommendations of the Council.

(5) If, after carrying out the review, the Council is of the view:

(a) that there is no sound medical-scientific evidence that justifies the making of a Statement of Principles, or an amendment of the Statement of Principles in force, in respect of that kind of injury, disease or death; or

(b) that the sound medical-scientific evidence available to the Authority is insufficient to justify the making of a Statement of Principles, or an amendment of the Statement of Principles, in respect of that kind of injury, disease or death;

the Council must make a declaration in writing to that effect giving the reasons for its decision. The Council may include in the declaration any recommendation that it considers fit to make about any future investigation that the Authority may carry out in respect of that kind of injury, disease or death.

17. The functions and powers of the Council must be seen in light of the function and purpose of Statements of Principles in the scheme of the Act. The significance of Statements of Principles to claims under the Act for pensions in relation to eligible service is apparent from sections 120A and 120B which provide as follows:-

120A.(1) This section applies to any of the following claims made on or after 1 June 1994:

(a) a claim under Part II that relates to the operational service rendered by a veteran;

(b) a claim under Part IV that relates to:

(i) the peacekeeping service rendered by a member of a Peacekeeping Force; or

(ii) the hazardous service rendered by a member of the Forces.

Note 1: Subsections 120 (1), (2) and (3) are relevant to these claims.

Note 2: For “peacekeeping service”, “member of a Peacekeeping Force”, “hazardous service” and “member of the Forces” see subsection 5Q (1A).

(2) If the Repatriation Medical Authority has given notice under section 196G that it intends to carry out an investigation in respect of a particular kind of injury, disease or death, the Commission is not to determine a claim in respect of the incapacity of a person from an injury or disease of that kind, or in respect of a death of that kind, unless or until the Authority:

(a) has determined a Statement of Principles under subsection 196B (2) in respect of that kind of injury, disease or death; or

(b) has declared that it does not propose to make such a Statement of Principles.

(3) For the purposes of subsection 120 (3), a hypothesis connecting an injury suffered by a person, a disease contracted by a person or the death of a person with the circumstances of any particular service rendered by the person is reasonable only if there is in force:

(a) a Statement of Principles determined under subsection 196B (2) or (11); or
(b) a determination of the Commission under subsection 180A (2);
that upholds the hypothesis.
Note: See subsection (4) about the application of this subsection.

(4) Subsection (3) does not apply in relation to a claim in respect of the incapacity from injury or disease, or the death, of a person if the Authority has neither determined a Statement of Principles under subsection 196B(2), nor declared that it does not propose to make such a Statement of Principles, in respect of:
(a) the kind of injury suffered by the person; or
(b) the kind of disease contracted by the person; or
(c) the kind of death met by the person;
as the case may be.

18. Section 120B provides:-

120B.(1) This section applies to any of the following claims made on or after 1 June 1994:
(a) a claim under Part II that relates to the eligible war service (other than operational service) rendered by a veteran;
(b) a claim under Part IV that relates to the defence service (other than hazardous service) rendered by a member of the Forces.
Note 1: Subsection 120 (4) is relevant to these claims.
Note 2: For "hazardous service" and "member of the Forces" see subsection 5Q (1A).

(2) If the Repatriation Medical Authority has given notice under section 196G that it intends to carry out an investigation in respect of a particular kind of injury, disease or death, the Commission is not to determine a claim in respect of the incapacity of a person from an injury or disease of that kind, or in respect of a death of that kind, unless or until the Authority:
(a) has determined a Statement of Principles under subsection 196B (3) in respect of that kind of injury, disease or death; or
(b) has declared that it does not propose to make such a Statement of Principles.

(3) In applying subsection 120 (4) to determine a claim, the Commission is to be reasonably satisfied that an injury suffered by a person, a disease contracted by a person or the death of a person was war-caused or defence-caused only if:
(a) the material before the Commission raises a connection between the injury, disease or death of the person and some particular service rendered by the person; and
(b) there is in force:
(i) a Statement of Principles determined under subsection 196B (3) or (12); or
(ii) a determination of the Commission under subsection 180A (3);
that upholds the contention that the injury, disease or death of the person is, on the balance of probabilities, connected with that service.

(4) Subsection (3) does not apply in relation to a claim in respect of the incapacity from injury or disease, or the death, of a person if the Authority has neither determined a Statement of Principles under subsection 196B(3), nor declared that it does not propose to make such a Statement of Principles, in respect of:
(a) the kind of injury suffered by the person; or
(b) the kind of disease contracted by the person; or
(c) the kind of death met by the person;
as the case may be.

19. Section 120 is also of significance and provides as follows:-

120.(1) Where a claim under Part II for a pension in respect of the incapacity from injury or disease of a veteran, or of the death of a veteran, relates to the operational service rendered by the veteran, the Commission shall determine that the injury was a war-caused injury, that the disease was a war-caused disease or that the death of the

veteran was war-caused, as the case may be, unless it is satisfied, beyond reasonable doubt, that there is no sufficient ground for making that determination.

Note: This subsection is affected by section 120A.

(2) Where a claim under Part IV:

(a) in respect of the incapacity from injury or disease of a member of a Peacekeeping Force or of the death of such a member relates to the peacekeeping service rendered by the member; or

(b) in respect of the incapacity from injury or disease of a member of the Forces, or of the death of such a member, relates to the hazardous service rendered by the member;

the Commission shall determine that the injury was a defence-caused injury, that the disease was a defence-caused disease or that the death of the member was defence-caused, as the case may be, unless it is satisfied, beyond reasonable doubt, that there is no sufficient ground for making that determination.

Note 1: For "member of a Peacekeeping Force", "peacekeeping service", "member of the Forces" and "hazardous service" see subsection 5Q(1A).

Note 2: This subsection is affected by section 120A.

(3) In applying subsection (1) or (2) in respect of the incapacity of a person from injury or disease, or in respect of the death of a person, related to service rendered by the person, the Commission shall be satisfied, beyond reasonable doubt, that there is no sufficient ground for determining:

(a) that the injury was a war-caused injury or a defence-caused injury;

(b) that the disease was a war-caused disease or a defence-caused disease; or

(c) that the death was war-caused or defence-caused;

as the case may be, if the Commission, after consideration of the whole of the material before it, is of the opinion that the material before it does not raise a reasonable hypothesis connecting the injury, disease or death with the circumstances of the particular service rendered by the person.

Note: This subsection is affected by section 120A.

(4) Except in making a determination to which subsection (1) or (2) applies, the Commission shall, in making any determination or decision in respect of a matter arising under this Act or the regulations, including the assessment or re-assessment of the rate of a pension granted under Part II or Part IV, decide the matter to its reasonable satisfaction.

Note: This subsection is affected by section 120B.

20. Section 5U of the Act provides that a Note is taken to be part of the provision that it immediately follows.

## The Statements of Principles

21. On October 3rd 1995 an Instrument 352 concerning Osteoarthrosis was made by the Repatriation Medical Authority. This was an amendment to the declarations of the RMA of August 29th which themselves had been amendments of the original Statement of Principles of February 20th, 1995. Instrument 352 became the finite document which was tabled in Parliament with Explanatory Notes. The Instrument and these notes are set out below:

## Written Submissions

22. The Gazette notice 28 February 1996 notified the Specialist Medical Review Council's intention to carry out a review. Written submissions were received from the Legal Aid Commission, on behalf of Mr John Elgar Beale, and the Repatriation Commission.

23. Additional material was submitted by Dr Peter Anderson an orthopaedic surgeon from West Perth in Western Australia and Mr Frank Dawson of Thornbury, Victoria. The materials submitted by Dr Anderson and Mr Dawson were not part of a formal application for review to the Council but simply were submitted at the time of the formal application from Mr John Elgar Beale. Nevertheless, the material was considered by the Council to assess any assistance that it might provide in deciding how the relevant Statement of Principles related to the material before the Authority.

24. In February 1996 the Repatriation Medical Authority provided to the Review Council, under section 196K of the Act, all of the information that was available to it when it determined Statements of Principles Nos 352 of 1995. On 29 February a copy of that material was sent to Mr John Elgar Beale. Copies of that material were then provided, by the Review Council, to Mr John Elgar Beale and the Repatriation Commission since they had made formal written submissions to the Review Council in response to the Gazette Notice.

25. The Review Council then invited those persons and organisations to make supplementary submissions addressing the material that was available to the Repatriation Medical Authority. In response to that invitation no supplementary written submissions were received.

**The written submissions**

**Mr Sherlock(on behalf of Mr John Elgar Beale) submitted a report by Professor Sambrook MD, LLB, FRACP,**

26. Professor Philip N Sambrook is a Senior Staff Specialist in bone and joint disease at St Vincent's Hospital, Sydney and an Associate Professor at the University of NSW. He has been appointed Professor of Rheumatology at the University of Sydney. He submitted two written reports on behalf of Mr John Elgar Beale . These were dated June 14th and August 26th 1996.

27. At the meeting of the Review Council on November 18th Mr Reg Sherlock, Advocate of Legal Aid Commission was present for the formal presentation of Professor Sambrook's submissions in order to ensure that the Review Council fully appreciated their content and in order to facilitate a subsequent telephone connection between Professor Sambrook and the Review Council. Mr Sherlock addressed the Review Council prior to the connection with Professor Sambrook and questioned him briefly on some aspects of his written submissions at the conclusion of his presentation.

28. The first submission by Professor Sambrook addresses the contribution of multiple minor trauma to the development of osteoarthrosis. He was critical of the studies, included in the material examined by the RMA, of the published consequences of very heavy work as manual labour performed particularly by farmers and coal miners. The RMA had initially decided that a period of twenty years of such activity would be required to ascribe attribution in the development of osteoarthrosis. This figure was subsequently reduced to ten years for the purposes of Instrument No. 352.

29. These studies have not especially concentrated on weight bearing joints and pay particular attention to the lumbar spine. They do not differentiate between patello-femoral or tibio-femoral arthritis which, as has been remarked above, constitute different forms of damage due to different forms of load bearing or repetitive bending strain.

30. All of these disabilities were more common in miners and farm workers compared with other manual workers or office workers of the same age. Professor Sambrook was critical of the definition of a miner in the study and found no definite information on the duration and extent of underground activity which could justify the setting of a time period.

31. Finally, Professor Sambrook drew attention to the possible relevance of short term, intense, heavy physical activity as against more sustained involvement as being applicable the development of osteoarthrosis. These critical comments were derived particularly from the Framingham studies[12] to which reference has already been made. Turning to the Swedish study[3], whose findings had possibly influenced the reduction of time period from twenty to ten years, Professor Sambrook was again critical of information therein and finding no justification for the setting of such a time period, neither in the development of the osteoarthrosis nor in its mode of early recognition.

32. Invoking again the Framingham studies[4] to support his rebuttal of the lack of evidence for physical activity as a cause of knee osteoarthrosis, Professor Sambrook could find no support for the statement that physical activity could not cause the condition and criticised the study for its inability to discern the consequences of heavy physical activity in the young.

33. In the conclusion of his first submission Professor Sambrook sought to differentiate between severe or macrotrauma to the knee and repetitive or multiple microtrauma and particularly stressed not only the initiation of joint disease but its aggravation or supplementary contribution to the subsequent development of osteoarthrosis.

34. A further comment was submitted on August 26th, 1996 wherein Professor Sambrook once more stressed the relevance of intermittent short periods of very heavy work as being of more importance than a global period of more sustained occupational exposure. In support of all of the aspects outlined above Professor Sambrook proposed the application of the following criteria:

> *It should be accepted as being more probable than not that osteoarthrosis can be related to operational or defence service by way of aggravation or contribution, in the sense that the osteoarthrosis was made worse by or occurred at an earlier age than might be expected by respectively, the presence of at least two out of three of the following circumstances,*
>
> *a) There was a documented period of overuse or overloading of the relevant joint affected by osteoarthrosis in excess of forces applied to that joint during activities of everyday living or civilian occupations. For example, loading of the spine with weight in excess of those amounts recommended*

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1 Hannan MT, Felson DT, Anderson J & Naimark A. (1993). Habitual physical activity is not associated with knee osteoarthritis: The Framingham study. *The Journal of Rheumatology*. 20 704 - 709

2 Felson DT, Hannan MT, Naimark A, Berkely J Gordon G, Wilson PWF & Anderson J. (1991) Occupational physical demands, knee bending, and knee osteoarthritis: results from the Framingham study. *The Journal of Rheumatology*. 18 1587-1592

3 E Vingard, L Alfredsson, I Goldie & C Hogstedt (1991) Occupation & Osteoarthrosis of the Hip & Knee: A Register-based cohort study. *Int Journal of Rheumatology*. 20 No4 1025-1031

4 See Note 1 &2

*by the International Labour Force (25kg compact load for youths and 58kg maximum overall), or excess forces applied to lower limb joints such as the knees or ankles by virtue of the requirement to perform military manoeuvres in arduous climate or terrain.*

b) *When the symptoms in the relevant joint occurred at an earlier age than would be expected for age-related osteoarthrosis or there is a consistent history of symptoms associated with the relevant joint from the relevant time of service; and*

c) *Where the degree of degeneration on x-ray occurs at an earlier age than expected or is more severe than expected for the given age.*

**Repatriation Commission - Dr Horsley**

35. The Repatriation Commission's written submission was based on the material that was before the Repatriation Medical Authority. The Commission had made a submission to the Authority that long term microtrauma is causal in the development of osteoarthrosis. The qualification was that material that would establish the length of time required was not determinative of that question but that 10 years, even though arbitrary, was probably the best outcome as a "reasonable hypothesis".

36. For the Repatriation Commission the approach was to consider the postulate, microtrauma, against the standard epidemiological criteria. During the process of that consideration the difficulties of diagnosis, confounding variables such as obesity and congenital malformation of joints as well as how to measure time and degree of effort were discussed.

37. The Repatriation Commission constantly referred to the difficulties associated with measuring all sorts of factors and in particular that activities that involved a deal of "microtrauma" were also likely to be those that involved gross trauma to joints. The conclusion was that while there were many confounding issue that to varying degrees there was a deal of evidence with which the Repatriation Medical Authority could have concluded that trauma over 10 years of heavy labour could cause osteoarthrosis.

**Dr Peter Anderson MB, B Chir, FRCS, FRACS, FFRM, RACP- Orthopaedic Surgeon**

38. Dr Anderson's submissions addressed several concerns and were supplemented by reference to his personal studies, undertaken with Vietnam veterans and other ex-service personnel. He has been a Lt Colonel (RL) of the Royal Australian Army Medical Corps for twenty years.

39. In his first letter of 19th March 1996 he takes exception to the terms of the Statement of Principles expressed as "being occupationally required" on the basis that special circumstances apply to combatants and to all servicemen in comparison to civilians. On this basis he recommends the inclusion of the words " having taken part in Operational Service or Training in a Combatant Role".

40. A further objection was raised to the words "trauma to the relevant joint" because of the difficulties which exist during active service for the reporting and treatment of joint

injuries. As examples Dr Anderson quotes a number of misfortunes which might beset a soldier exerting great effort in the field.

41. However, in so doing he strays from the focus of the Review Council in its concerns for the RMA Statement of Principles concerning weight bearing limbs. Again however, he draws attention to the great difficulties in fulfilling the criteria of notification of macrotrauma to a joint and to the attitudinal difficulties which surround the reporting of injuries whilst on active duty.

42. Dr Anderson had already made a submission to the RMA in 1995 and presented this again in a further letter dated April 4th, 1996. This comprised material from his personal practice experience with Vietnam Veterans who were separated into combative and non-combative compared with a group who served in peace time conditions in Australia. His findings and contentions suggest an excess of combat veterans suffering from multiple sites of osteoarthritis.

43. The data presented is interesting but in a raw state even though subjected to some statistical analysis. From it Dr Anderson deduces that combat duties create a special milieu in which premature osteoarthrosis and a predilection thereto can be readily identified. The information is provocative and requires further study.

44. It is correct to say that the data on Australian ex-servicemen in respect of osteoarthritis is almost non-existent necessitating an extrapolation from the civilian literature and that almost exclusively from the male. Dr Anderson submits that until this information is firmly lodged it is unreasonable to create a Statement of Principles. He calls for such a study extending his own observations to be carried out.

45. The papers were considered by the Review Council. There were many features overlapping with the submissions of Professor Sambrook and Dr Keith Horsley so that there was quite frequent resort to cross references.

**Mr Frank Dawson**

46. On 26 August 1996 Mr Frank Dawson wrote to the Administrative Review Council in Canberra. That letter was passed to the Administrative Appeals Tribunal and thence to the Department of Veterans Affairs before being received by the Specialist Medical Review Council on 30 August 1996. He was advised of the forthcoming Council review and invited to make any further submissions. He did not respond to that invitation.

47. While Mr Dawson did not make a submission in response to the formal notification of review his letter highlighted a particular point that was important in the consideration of the review. Mr Dawson’s objection was to the time period nominated by the RMA for the development of osteoarthrosis, claiming that "continuous heavy physical activity for a period of at least 10 years on service" would preclude the majority of ex-servicemen from any consideration whatsoever.

48. He called for an amendment of the Statement of Principles on the grounds that not to do so was a denial of natural justice.

49. The concept of denial of natural justice was not felt to apply to deliberations of the Council but rather the Council must consider whether the evidence available to the

Authority should have resulted in something different to the 10 year time limit contained in the Statement of Principles.

**The Oral Hearing**

50. On 18 November 1996 the Review Council held a meeting in relation to this review for the purpose of hearing oral submissions. At that meeting, Mr John Elgar Beale was represented by Mr Reg Sherlock of the Legal Aid Commission of New South Wales. Professor Phillip Sambrook also made submissions by telephone in support of Mr John Elgar Beale's request for review of the Statement of Principles. The Repatriation Commission was represented by Dr Keith Horsley.

51. Dr Horsley spoke to the written submission which had been made on behalf of the Repatriation Commission. At the outset Dr Horsley submitted that long-term microtrauma is causal to the development of osteoarthrosis in weight bearing joints. He then turned his attention to a consideration of "dose" with particular regard to the size of the trauma, its duration and whether intermittent or more continuous. The difficulties in quantifying all of these aspects together with the acknowledged difficulties in deciding time of onset and correlating clinical with radiological abnormalities were all underlined.

52. Having dealt with obvious episodes of trauma resulting in readily defined abnormalities (recognised at 2b (v)) he went on to discuss the difficulties both clinical and in the published literature of being certain that microtrauma is responsible for osteoarthrosis but concluded that despite these reservations, the Repatriation Commission accepted that microtraumata is a weak causative agent but only when the microtraumata has been of long duration.

53. Dr Horsley went on to discuss the unique nature of military service. In the comments above and in this additional aspect he drew attention to the large number of studies of industrial and occupational stress and trauma conceding that particular studies involving service personnel were conspicuously lacking and that most deductions had to be extrapolated from such studies as involved firemen, farmworkers, mail deliverers and the like. The two Framingham studies[5][6] received particular attention.

54. The Council believes that Dr Horsley's opinion can be summarised as saying that episodes of single trauma, and microtraumata of long duration can cause osteoarthrosis.

55. He submitted that the Statement of Principles already reflected this conclusion and thus required no amendment.

56. Dr Horsley was questioned about his concept of 'trauma', 'microtrauma' and 'traumata'. He perceived this to be a continuum of possibilities ranging across "gross, not so gross, less gross and eventually traumata".

57. In elaboration of this point Dr Horsley was asked to consider the evidence from the Mankin article of 1982[7] which suggests that even if laceration of articular cartilage occurs there may be no development of degenerative joint disease. Additionally he was

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5 Felson DT (1991). (see Note 2)

6 Hannan MT (1993) (see Note 1)

7 Mankin HJ. (1982) Current Concepts review: The response of articular cartilage. *Journal of Bone Joint Surgery [Am]*. 64 464

invited to comment on the strong evidence from several studies (Hanes [8], Eichner [9], Hannan [10], Panush [11]) all of which state that prolonged running does not cause osteoarthrosis. Dr Horsley drew attention to the running under vastly different circumstances which servicemen were called upon to undertake.

58. Dr Horsley commented on the time period of 10 years which had been set by the RMA and acknowledged that very few ex service personnel would be able to fulfil this criterion however, he stated that this was the shortest period which the RMA could confidently derive from the literature as being relevant and had reduced its estimate from the previous 15 years accordingly. It was important that conclusions were based on the best scientific literature available.

59. On the question whether microtrauma, of itself, could ever lead to the development of osteoarthrosis and the view of Mankin[12] that repetitive minor trauma to normal articular cartilage did not lead to osteoarthritis, Dr Horsley reiterated his opening statement that, in his opinion, microtrauma could be a forerunner of osteoarthrosis given sufficient repetitive force over a sufficient length of time. It was his view that 10 years represented a fair expression of that period of time.

**Mr Sherlock**

60. Prior to contacting Professor Sambrook on conference call Mr Sherlock spoke to the Review Council. He called attention to the irrelevance for veterans of the present time period of ten years before attribution can be considered since, in his opinion, very few would have the service record to so qualify. He stressed the difference between microtrauma and macrotrauma and the different perception and response which a service person might have as compared to a civilian.

61. Extending this concept Mr Sherlock delineated the special circumstances which prevail on active service and reiterated what he considered to be an important concept of repetitive microtrauma in support of which he referred to the Sambrook submissions. Without addressing any questions of the legal implications, to which the Review Council would have been unable to respond, he stressed the need to consider contribution as against causation.

62. Mr Sherlock concluded by requesting a more general consideration and relaxation toward orthopaedic injuries to which the RMA might turn its attention.

**Telephone evidence of Professor Philip N. Sambrook**

63. Professor Sambrook joined the Review Council by conference phone in the mid-afternoon. After the preliminaries he was questioned concerning his submissions by Mr Sherlock with particular emphasis on two aspects

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8 Anderson JJ and Felson DT. (1988) Factors associated with osteoarthritis of the knee in the first national health and nutrition examination survey (HANES I) *American Journal of Epidemiology*. Vol 128, No 1, 179-189

9 Eichner ER. (1989) An epidemiologic perspective: Does running cause osteoarthritis? *The Physician and Sports Medicine*. Vol 17 No3, March 147 -154.

10 Hannan MT (1993) (see Note 1)

11 Panush RS and Brown DG. (1987) Exercise and arthritis. *Sports Medicine*. 4, 54-64

12 Mankin HJ (1982) (see Note 5) p 464

- repeated excess pressure on normal joints as defined by the criteria which he had enunciated in his second report and
- repeated minor trauma which might be disregarded by the service person.

64. In response Professor Sambrook extended the basic objections which have been described above in the precis of his submissions. He conceded that he knew of no direct scientific evidence for a relationship between repeated minor trauma and the subsequent development of osteoarthrosis but it was his contention that certain occupations that showed exposure to certain activities could, by extrapolation, be regarded as prone to such development. It was his contention that the environment and the duties of the service person lent themselves especially to this likelihood.

65. In support of the concept of contribution Professor Sambrook noted the premature development of osteoarthrosis in ex-servicemen quite outside the expectation of such changes with normal aging.

66. During the discussion with the Review Council which followed, reference was again initially drawn to the matter of clinical semantics - microtrauma versus macrotrauma.

67. The lack of demonstrable relationship between running over long periods of time and the development of osteoarthrosis was countered by the specific circumstances in which such running occurred and the individual who was participating.

68. The lack of evidence for repetitive non-injury to the articular cartilage as being causative was countered with the strong association of certain occupations with osteoarthrosis offered.

69. Experimental studies of negative nature were advanced by the members of the Review Council but were deflected on the basis that they did not reflect the true nature of the service experience. The differences between active and non-active service were explored but the material before the Review Council did not assist in this delineation.

70. Despite examining the question from several sides it was not possible to achieve consensus on a particular time which could be unequivocally stated in general terms as being the necessary period of exposure to an osteoarthrosis-producing stimulus. The literature just does not permit this specificity particularly with regard to weight bearing limbs. There is much more information concerning the spine.

71. In concluding his remarks Professor Sambrook turned once more to the criteria enunciated in his second submission which were an attempt to rationalise an approach to the veteran with osteoarthrosis by deriving a set of principles which could satisfy balance of probabilities and reasonable hypothesis.

## REASONS FOR THE DECISION

72. Statements of Principles provide, exclusively, the medical-scientific element within a suggested chain of causation in a claim for pension for an injury, disease or death. If the claimed injury, disease or death is of a kind that is the subject of a Statement of Principles, then, where subsection 120(3) applies, a hypothesis will be

reasonable for the purposes of that subsection only if the Statement of Principles upholds that hypothesis.

73. Similarly, where subsection 120(4) applies instead, the Commission can be reasonably satisfied that the injury, disease or death was war-caused or defence-caused only if the Statement of Principles relating to that kind of injury, disease or death upholds the contention that the injury, disease or death is, on the balance of probabilities, connected with the person's service.

74. It is important to note that Statements of Principles made under subsection 196B(2) do not, of themselves, define a 'reasonable hypothesis'. A 'reasonable hypothesis' can only ever arise in the context of a claim for pension and must relate to the connection between the particular circumstances of the particular person's service and his or her injury, disease or death.

75. Neither the Repatriation Medical Authority nor the Specialist Medical Review Council is concerned with the determination of the cause of injury, disease or death of a particular individual. That evaluation must be made subsequently in assessing the relevance of a Statement of Principles to the case of a particular claimant.

76. However, one or more factors contained within a Statement of Principles must provide support for the medical-scientific link that forms part of a 'reasonable hypothesis' when the Statement of Principles is relied upon to uphold a suggested chain of causation linking the particular circumstances of a veteran's service to his or her injury, disease or death. Therefore, the factors that are to be contained in a subsection 196B(2) Statement of Principles must be such that it can be said, in relation to every person for whom a factor is relevant and who has suffered or contracted, or who has died from, the relevant kind of injury or disease, that a 'reasonable hypothesis' has been raised connecting that person's injury, disease or death with the circumstances of his or her service.

77. The inclusion of a particular factor in a Statement of Principles determined under subsection 196B(2) means that the Repatriation Medical Authority is satisfied that there is sound medical-scientific evidence that indicates that it can be said, in the case of every person to whom the Statement of Principles applies, that it is a 'reasonable hypothesis' that exposure of the person to that factor made a contribution to that person's injury, disease or death.

78. Similarly, for a Statement of Principles determined under subsection 196B(3), the inclusion of a particular factor in that Statement of Principles means that, on the sound medical-scientific evidence available, the Repatriation Medical Authority is satisfied that it can be said in the case of every person to whom that Statement of Principles applies, it is more likely than not that exposure of the person to that factor made a contribution to that person's injury, disease or death.

**Sound medical-scientific evidence**

79. The Review Council is bound to make its decisions on the basis of sound medical-scientific evidence as defined in section 5 AB of the Act. Paragraph 5 AB(2) refers to the applicable criteria for assessing causation currently used in the field of epidemiology and in previous reviews the Review Council has had special recourse to these criteria.

80. It is clearly the intention of Parliament that each Review Council should comprise specialists who will bring an unrivalled expertise in considering matters before it. In many circumstances epidemiological considerations will figure strongly but exclusively in the deliberations. In the case of osteoarthrosis as it applies to former service men and women these considerations trend more toward the experimental and documentary evidence contained in extensive case studies. Nevertheless, such studies must carry the weight of numbers, balance and criticality for them to be acceptable in justification of or rebuttal of the Statement of Principles which is being examined.

81. As an extension of this mandate the Review Council must state that it cannot be influenced by considerations of sympathy or special pleadings no matter to what extent individual members may respond to these. The Review Council is bound to make its decision based on the evidence before the RMA at the time unless that evidence is so extenuating or opposing as to cause it to reject the RMA Statement of Principles or request that it be re-examined.

82. The task of the Review Council set out in subsections 196W(4)&(5) does not give it authority to make its decision on the basis of “giving a fair go” as was suggested by some submissions.

83. This Review Council has taken the view that examination of any Statement of Principles must include a consideration of the whole of the Statement of Principles even though particular aspects of concern and the subjects of objection may only relate to parts of that whole. To do otherwise would be to disregard the effect of changing one factor without due regard to its influence on the total substance of the Statement of Principles as it was originally determined.

84. This does not necessarily mean that each and every aspect of the Statement of Principles must be examined and potentially modified, only that the Review Council must clearly delineate any area of change, having regard to the impact that any change in one part might have on other aspects of the same Statement of Principles.

85. This Review Council understood that the material available to the Repatriation Medical Authority was that conveyed to the Review Council for its consideration in the review. It was only on this basis that such a review could be concluded since a finite point must be set at which the review process terminates its considerations. Allowance has been made in the legislation for new, cogent findings, which might alter outcomes, to be relayed to the Authority for its proper evaluation and response.

86. It is recognised that the Repatriation Medical Authority is required to consider the medical and scientific merit and relevance of any posited connection based on current epidemiological and verifiable clinical criteria. In the case of osteoarthrosis such criteria might be based upon critically constructed prospective or retrospective case studies, on the outcome of relevant experimental considerations or on a wave of incidence so strong as to be undeniable. Unfortunately, none of the material currently available to further an understanding of the aetiology of osteoarthrosis meets all of the above desiderata. More than that, there is a singular lack of studies specifically focusing on the weight bearing limb and particularly as such disturbances relate to war service and the post -war service period. The Specialist Medical Review Council is required to evaluate the content of the Statements of Principles or the Instrument bringing about a change in

those Statements using all of the information on causality available to the Repatriation Medical Authority at the time it made its decisions.

87. The request for a review of Statement of Principles was in the following terms:

*"I seek to review item b (vii) which requires that, for osteoarthrosis of a weight bearing to the lower limb to be accepted, the Veteran is required to undertake heavy physical activity for at least 10 years before the clinical onset of arthrosis. The 10 year requirement is excessive, arbitrary, takes no account of the particular circumstances of individual veterans, and is designed to exclude claims since very few indeed serve for 10 years or more."*

88. In the light of this application, the Review Council took the view that it had been asked to consider the scientific evidence relevant to a weight bearing lower limb and in particular to the duration of time required for osteoarthrosis to be set in train. The nature of the trauma, heavy physical activity, required to induce the development of osteoarthrosis was also considered to be integral to the question.

89. Notwithstanding, the Review Council was aware that any item of the Statement of Principle could be considered following the appeal against one aspect. In the event no items additional to 2b(vii) and 2b (xi) were raised. However, the special circumstances of war service (as against individual veterans whose claims lie outside the purview of the Review Council) were frequently considered throughout the proceedings.

90. By the conclusion of the Review Council had satisfied itself that it had been privy to all of the material relevant to osteoarthrosis which had been available to the RMA at the time of the creation of the Instrument. Its attention was drawn by Professor Smith to an article entitled "*The knees and ankles in sport and veteran military parachutists*"[13] in which 112 active sports and military parachutists were compared. No difference in the subsequent development of osteoarthritis was found. Since this study had been published almost twenty years ago, in 1977, and not replicated more recently, it was not considered an omission on the part of the RMA. The article itself was not provided to the Review Council and since it did not add to the material was not considered significant.

91. Almost immediately the Review Council encountered difficulties in clearly defining two major elements of the Statement of Principles.

92. The Repatriation Medical Authority has defined "osteoarthrosis" (generalised osteoarthrosis, attracting ICD code 715.1, 715.2, 715.3 or 715.8) as a heterogeneous group of clinical joint disorders associated with defective integrity of the articular cartilage and related changes in the underlying bone and joint margins, and which has the following characteristics:

a) a history of pain;
b) impaired function;
c) joint swelling and
d) stiffness"

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13 Not otherwise identified.

93. It was not the place of the Review Council to modify this definition but at the outset, and certainly as the proceedings unfolded, it was apparent that inflammation of the synovium and the capsule were extremely important to an understanding of the background to the ultimate development of osteoarthrosis.

94. Although "**trauma to the relevant joint**" is clearly defined in the amended Statement of Principles, this appears to relate to what may be termed "macrotrauma". Repeatedly throughout the proceedings reference was made to "microtrauma" and "traumata", which have not been defined yet have great importance in the consideration of minimal stress, neglected but repeated minor injury and trauma as well as trauma relevant to the normal duties of a range of occupational conditions. During the hearing of submissions attempts were made to discern just what each witness perceived this range of effects on the joint might mean.

95. The Review Council was of the opinion that the material studied by the Authority in coming to its Statement of Principles was the most relevant and informative. The Review Council drew attention to the 1977 study comparing knee and ankle injury in sport and veteran military parachutists (referred to above). In the event it was considered that this report did not materially influence the ultimate declarations of the Review Council. However note was taken of its existence so that any future investigation may refer to it.

96. None of the Review Council members was able to suggest any other important material at the time of the conclusion of the Statements of Principles which had not been included, nor did any of the witnesses advance evidence for such material which would have altered the outcome of our review.

97. The Review Council found that the material that was available to the Repatriation Medical Authority offered a selection of weighty and extensive studies on the relationship of trauma and occupation to the development of osteoarthrosis although, as has been stated many of these bundled spinal with weight bearing limb conditions and none contained specific scrutiny of the particular conditions appertaining to military service - either active or non-active.

98. The close reasoning advanced by Professor Sambrook concerning periodicity of exposure and intensity of experience caused the Review Council to look very closely for all of the evidence on which a re-evaluation might have been made of the time period. Nothing further was found.

99. The submission of Dr Peter Anderson has been considered in some detail in a preceding portion of this report. The Review Council was impressed by the extent of material presented but could only agree with what Dr Anderson himself has said when he stated that, in this form, the results of his own observation and recording are not sufficiently critical to withstand comparative statistical judgement nor the usually acceptable criteria for a controlled clinical trial of retrospective type. It was for this reason that the Review Council could not incorporate his written submission into its reasoning.

100. The suggestions of Professor Sambrook in the second of his written submissions were also unacceptable to the Review Council as a basis for rejection or modification of the Statement of Principles. One of the principal reasons for this was an inability to accurately define and agree upon microtrauma, traumata and multiple minor trauma.

This was not a matter of splitting semantic clinical hairs but fundamental to the concept of the Review Council that disruption of the articular cartilage is necessary for the subsequent development of that chain of events leading to osteoarthrosis.

101. Additionally, it was the unanimous opinion of the Review Council that for osteoarthrosis to develop ten or even twenty years after strenuous physical exercise it would be necessary for there to have been some evident damage to the joint surface prior to this time. Only in the presence of a previously abnormal joint could such an outcome be conceived and the Statement of Principles already makes provision for such a circumstance. The Review Council perceived the inconsistencies in the Swedish study[14] and accompanying incidence table in which those subjected to the greatest potential occupational trauma and physical stress did not necessarily figure in the high echelons of incidence of osteoarthritis.

**The relationship of osteoarthrosis to the healthy joint**

102. The Review Council has taken the view that its critical evaluation of the RMA Statement of Principles and Instrument must focus primarily on the initially healthy joint. In its preliminary discussions on the problem the Review Council felt that the malaligned, injured or disease- afflicted joint were all adequately covered by existing clauses in the Statement. This view was not challenged by anything in material within the matters raised by the application for review or the conduct of the review itself.

103. Considering the question as to whether heavy physical activity could produce osteoarthrosis in a previously healthy joint of the lower limb the Review Council was of the unanimous opinion, based on the literature available to them in the review, that this was not so. They carefully considered the alternative viewpoint advanced by Professor Sambrook but could not find substantiation in the literature reviewed that did not raise concerns about the scientific or medical validity or credibility of that material.

104. The Review Council examined the definition of osteoarthrosis advanced by the Repatriation Medical Authority and agreed in general with its content. There was however a strong opinion that inflammation of the synovium should be included even though 'defective integrity of the articular cartilage' was expressly stated. Members of the Review Council expressed the view that without inflammation of the synovium and the consequent release of slowly progressively injurious substances, osteoarthrosis was most unlikely to develop.

105. Considering the question of the 10 year requirement being excessive, arbitrary and taking no account of individual veterans the Review Council could appreciate why this figure had been set by the RMA on the basis of the major studies which it had used. The Review Council felt that there was no actual time period which could be accurately or reliably placed but did not consider that it could find sufficient evidence in the literature to refute, modify or delete the time period set by the RMA. To this extent the accusation of arbitrariness might be recognised, but the removal of such an “arbitrary " period would, in the opinion of the Review Council, leave no figure whatsoever on which to base further considerations as evidence becomes available.

106. In supporting the current status enunciated by the Repatriation Medical Authority the Review Council would wish to call for a search for such studies as may address this

[14] Vingard E (1991) (see Note 3) p 1028 - 1029

Profound problem and for the setting up of a means to scientifically explore the problem as it relates to Australian service personnel on active and normal duties.

**Declarations**

107. The Review Council recommends that the Repatriation Medical Authority reconsider the effects of repetitive activity as a factor together with any further information that may arise from any later studies relating to osteoarthrosis. The Review Council is of the view that there is no sound medical-scientific evidence that justifies any other amendment of Statement of Principles no 352 of 1995.

**EVIDENCE BEFORE THE REVIEW COUNCIL**

108. The material submitted by the Repatriation Medical Authority was provided in two volumes. It is listed below by volume, page number and article. This material was the primary basis for consideration during the formal hearing and the deliberations of the Review Council members.

| | | |
|---|---|---|
| 1 | 1 | RMA - Explanatory notes for tabling - Osteoarthrosis |
| 1 | 2 | SOP - Osteoarthrosis - ICD 715 |
| 1 | 3 | Medline Search - Osteoarthrosis |
| 1 | 4 | **Factors associated with osteoarthritis of knee in first national health & nutrition examination survey (Hanes I)** |
| 1 | 5 | **Follow-up studies of World War II and Korean War Prisoners** - GW Beebe |
| 1 | 6 | **Viewpoint Sport, Exercise & Arthritis** - HC Burry |
| 1 | 7 | **Occupational activity and osteoarthritis of the knee** - C Cooper, T Mcalindon, D Coggon, P Egger, P Dieppe |
| 1 | 8 | **Obesity & Osteoarthritis of the Knee: Evidence from the National Health & Nutrition Examination Survey** - MA Davis, WH Ettinger & JM Neuhaus |
| 1 | 9 | **Smoking, A Cause of Back Trouble** - E Ernst |
| 1 | 10 | **Obesity and Knee Osteoarthritis - The Framingham Study** DT Felson, JJ Anderson etc |
| 1 | 11 | **Occupational Physical Demands, Knee Bending & Knee Osteoarthritis: Results from the Framingham Study** - DT Felson etc |
| 1 | 12 | **Bacterial arthritis** - DL Goldenberg and JI Reed |
| 1 | 13 | **Habitual Physical Activity is Not Associated with Knee Osteoarthritis: The Framingham Study** - MT Hannan, DT Felson etc. |
| 1 | 14 | **Cigarette smoking & risk of osteoarthritis in women in general population: the Chingford study** - DJ Hart & TD Spector |
| 1 | 15 | **Arthritis and Exercise** - DF Hoffman |
| 1 | 16 | **Rheumatism in Miners** - Part II X-ray study - JH Kellgren and JS Lawrence |
| 1 | 17 | **Degenerative Arthritis of the Knee Secondary to Fracture Malunion** DB Kettelkamp, BM Hillberry, DE Murrish, & DA Heck |
| 1 | 18 | **Osteoarthritis of weight bearing joints of lower limbs in former elite male athletes** - UM Kujala, J Kaprio, S Sarna |
| 1 | 19 | **Exercise: A cause of osteoarthritis?** - NE Lane & JA Buckwalter |
| 1 | 20 | **Long-distance running, bone density, & osteoarthritis** - NE Lane, DA Bloch, HH Jones etc. |

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| 1 | 21 | **Rheumatism in Miners - Part I: Rheumatic complaints** - JS Lawrence, J Aitken-Swan |
| 1 | 22 | **The Untreated Anterior Cruciate Ligament Rupture** - WJ McDaniel, TB Dameron |
| 1 | 23 | **Exercise & Arthritis** - RS Panush & DG Brown |
| 1 | 24 | **Is Osteoarthritis in women affected by hormonal changes or smoking?** - A Samanta, A Jones, M Regan etc. |
| 1 | 25 | **Age and weight in osteoarthritis of the hip** - PD Saville & J Dickson |
| 1 | 26 | **Osteoarthritis & Obesity in the General Population - A Relationship Calling for an Explanation** - JLCM van Saase, JP Vandenbroucke, LKJ van Romunde etc. |
| 1 | 27 | **Chronic morbidity of former prisoners of war & other Australian veterans** - AJ Venn & CS Guest |
| 1 | 28 | **Occupation & Osteoarthrosis of the Hip & Knee: A Register-based cohort study** - E Vingard, L Alfredsson, I Goldie & C Hogstedt |
| 1 | 29 | **Injuries of the Anterior Cruciate & Medial Collateral Ligaments of the Knee** - RF Warren, JL Marshall |
| 1 | 30 | Correspondence and submissions to the Repatriation Medical Authority |
| 1 | 31 | R&SL letter to RMA - 29 August 1995 |
| 1 | 32 | Letter from Andrew Leiboff to Professor Ken Donald, RMA |
| 1 | 33 | Action sheet |
| 1 | 34 | Letter from Dr JL Johnston to Professor Donald, RMA |
| 1 | 35 | Letter from Ray Jessop, RMA to Dr JL Johnston |
| 1 | 36 | Letter from Peter Anderson to Professor Donald, RMA |
| 1 | 37 | Letter from War Pensions Agency, Blackpool to Professor Donald, RMA |
| 1 | 38 | Letter from Ray Jessop to Mr Trevor-Hunt, Wangaratta |
| 1 | 39 | Letter from Mr Trevor-Hunt, VVAA to the RMA |
| 1 | 40 | Director General of Army Health Instruction No 191/83 |
| 1 | 41 | Army Office Staff Instruction No 34/83 |
| 1 | 42 | Letter from Ray Jessop to Mr Baker, Pacific Palms NSW |
| 1 | 43 | Letter from Ray Jessop to Mr GF Smith, Claremont, TAS |
| 1 | 44 | Letter from Mr Graeme Smith to RMA |
| 1 | 45 | Letter from Peter Anderson to Professor Donald, RMA |
| 1 | 46 | Letter from A Lyons to RMA |
| 1 | 47 | Letter from Dr John H Morris to DVA Brisbane |
| 1 | 48 | Letter and submission from Peter Kelly, R&SL to RMA |
| 1 | 49 | A preliminary report prepared for the RMA by the Division of Orthopaedic Surgery Uni of Qld |
| 2 | 50 | **Force Wave Transmission Through the Human Locomotor System** A Voloshin, J Wosk, M Brull |
| 2 | 51 | **Shock Absorption of Meniscectomized and Painful Knees: A Comparative in Vivo Study** - AS Voloshin and J Wosk |
| 2 | 52 | **Obesity as a Risk Factor for Osteoarthritis of the Hand and Wrist: A Prospective Study** - WJ Carman, MF Sowers, VM Hawthorne, LA Weissfeld |
| 2 | 53 | **Arthrosis and its relation to work** - JAD Anderson |
| 2 | 54 | **Felling work, low-back pain and osteoarthritis** - E Sairanen, L Brushaber etc. |
| 2 | 55 | **Do occupation-related physical factors contribute to arthritis?** DT Felson |
| 2 | 56 | **Rheumatism in Coal Miners Part III: Occupational Factors** JS Lawrence |

2 57 **Does Running Cause Osteoarthritis?** - M Pasclae, WA Grana
2 58 **Sports and osteoarthrosis of the hip** - E Vingard, Lars Alfredsson etc.
2 59 **Does Running Cause Osteoarthritis? An Epidemiologic Perspective** ER Eichner
2 60 **Mechanical, Morphological & Biochemical Adaptations of Bone and Muscle to Hindlimb Suspension & Exercise**: SR Shaw, RF Zernicke etc.
2 61 **Incidence of clinically diagnosed vertebral fractures: A population-based study in Rochester, Minnesota, 1985-89** - C Cooper, EJ Atkinson etc.
2 62 **The Association of Obesity with joint pain and Osteoarthritis in the Hanes Data** - AJ Hartz, ME Fischer etc.
2 63 Medline search
2 64 **The Relationship between Anthropometric, Postural, Muscular and Mobility Characteristics of males Ages 18-55** - MH Pope, T Bevins, DG Wilder etc.
2 65 **Lumbar Disc Herniation: A Controlled, Prospective Study with Ten Years of Observation** - H Weber
2 66 **Release of Inflammatory Mediators from Stimulated Neutrophils** G Weissmann, JE Smolen & H M Korchak
2 67 **Lyosomal Mechanism of Tissue Injury in Arthritis** - G Weissmann
2 68 **Factors Influencing Articular Cartilage Wear in Vitro** - EL Radin, DA Swann, I L Paul and PJ McGrath
2 69 **Role of mechanical factors in pathogenesis of primary osteoarthritis** EL Radin, IL Paul & RM Rose
2 70 References
2 71 **Osteoarthritis - The Epidemiologic Viewpoint** - JG Peyron
2 72 **Arthrosis of human hip and knee : Bone and Bone Marrow**
2 73 **Acute cervical cord injuries in patients with epilepsy** - JW Allen, BE Kendall, RS Kocen & NM Milligan
2 74 **Risk Factors for the Development of Osteoarthrosis of the Knee** ND Kohatsu, & DJ Schurman
2 75 **Biomechanical Aspects of Occupation and Osteoarthritis of the Hip: A Case-Control study** - KE Roach, V Persky, T Miles etc.
2 76 **Severe Osteoarthritis of the Elbow in Foundry Workers, An Occupational Hazard** - G Mintz, A Fraga
2 77 **Osteoarthritis, The Epidemiologic Viewpoint** - J G Peyron
2 78 **Occupational arthropathy: evidence from the past** - HA Waldron, M Cox
2 79 **Athletes & Osteoarthritis - Is there any Relationship?** - A Isdale, PS Helliwell
2 80 **Seven-year follow-up of white-finger symptoms and radiographic wrist findings in lumberjacks and referents** - J Kivekas, H Riihimaki etc.
2 81 **Vertebral Fracture or Vertebral Deformity?**- M Kleerekoper, DA Nelson
2 82 **Knee Pain in Middle Age and Its Relationship to Occupational Work Load and Psychosocial Factors** - H. Bergenudd, B O Nilsson & F Lindgarde
2 83 **Epidemiology of Hip and Knee Osteoarthritis** - DT Felson
2 84 **Epidemiology and the arthritides** - RM Acheson
2 85 **Knee joint in soccer players: osteoarthritis and axis deviation** A Chantraine

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| 2 | 86 | **Human Paleopathology, Current Synthesis & Future Options** DJ Ortner and AC Aufderheide |
| 2 | 87 | **Degenerative Joint Disease in Hunter-Gatherers & Agriculturalists from the Southeastern US** - PS Bridges |
| 2 | 88 | **Life Stresses of Slavery** - JO Kelley & JL Angel |
| 2 | 89 | **Mechanical & Constitutional Risk Factors for Symptomatic Knee Osteoarthritis: Differences Between Medial Tibiofemoral & Patellofemoral Disease** - C Cooper etc. |
| 2 | 90 | **Relationships between Habitual Physical Activity and Osteoarthrosis in Ageing Women** - JA White, V Wright & AM Hudson |
| 2 | 91 | **Radiographic osteoarthrosis in the acromioclavicular joint resulting from manual work or exposure to vibration** - B Stenlund, I Goldie, M Hagberg, C Hogstedt & O Marions |
| 2 | 92 | **The epidemiology of osteoarthritis of the knee** - CW Slemenda |
| 2 | 93 | **The prevalence of diffuse idiopathic skeletal hyperostosis in African blacks** - B Cassim, GM Mody and D Rubin |
| 2 | 94 | **Rheumatism in cotton operatives** - JS Lawrence |
| 2 | 95 | **The Relationship of Obesity, Fat Distribution and Osteoarthritis in Women in the General Population: The Chinfgord Study** - DJ Hart and TD Spector |
| 2 | 96 | **Is Running Associated with Degenerative Joint Disease?** RS Panush, C Schmedit, JR Caldwell etc. |
| 2 | 97 | **Long-Distance Running, Bone Density & Osteoarthritis** - NE Lane, DA Bloch, HH Jones etc. |
| 2 | 98 | **Musculoskeletal injuries associated with physical activity in older adults** - GO Matheson, JG Macintyre etc. |
| 2 | 99 | **Osteophytosis of the Knee: Association with Changes in Weight-Bearing Exercise** - BA Michel, JF Fries etc. |
| 2 | 100 | **Osteoarthritis** - DT Felson |
| 2 | 101 | **Bone and joint changes in pneumatic drillers** - MJ Burke, EC Fear and V Wright |
| 2 | 102 | Medline searches |
| 2 | 103 | **Upper-Extremity Musculoskeletal Disorders of Occupational Origin** F Gerr, R Letz and PJ Landrigan |
| 2 | 104 | **Hand Structure and Function in an Industrial Setting** -NM Hadler, DB Gillings, HR Imbus etc. |
| 2 | 105 | **Low Back Pain: Fusion** - JN Weinstein |
| 2 | 106 | **Physical Activity as a Risk Factor for Osteoarthritis of the Knee** RL Imeokparia, JP Barrett, MI Arrieta etc. |
| 2 | 107 | **Etiologic fractions for physical work load, sports and overweight in the occurrence of coxarthrosis** - O Olsen, E Vingard, M Koster, L Alfredsson |
| 2 | 108 | **The Risk of Osteoarthritis with Running and Aging: A 5-year Longitudinal Study** - NE Lane, B Michel, A Bjorkengren etc. |
| 2 | 109 | **Stress and the Etiology of Osteoarthritis** - RD Jurmain |
| 2 | 110 | **Osteoarthritis of the hip and knee joint in retired football players** RT Bjorno Klunder, B Rud & Jorgenhansen |
| 2 | 111 | **Occult Cartilage and Bone Injuries of the Knee: Detection, Classification, and Assessment with MR Imaging** - JH Mink, AL Deutsch |
| 2 | 112 | **Current Concepts Review - The Response of Articular Cartilage to Mechanical Injury** - HJ Mankin |

2 113 Medline searches

**Written submissions**

109. Material supplied to the Repatriation Medical Authority as contained in the documentation includes a paper written by Dr Keith Horsley for the Repatriation Commission entitled "**Osteoarthrosis, with particular emphasis on major weight bearing joints, particularly in relation to the effects of microtrauma through occupational and/or recreational physical activity**" presented under cover of a letter to the Secretariat dated 15 October 1996.

110. There were two reports from Professor PN Sambrook to the Legal Aid Commission of NSW on behalf of Mr John Elgar Beale dated 14 June 1996 and 26 August 1996 which were provided to the Review Council but had not been considered by the Repatriation Medical Authority.

111. The Review Council also had written papers from Dr Peter Anderson dated 15 March 1996, 3 April 1996, 4 April 1996 and an amendment to the paper of 3 April 1996 dated 31 May 1996.

112. The letter from Mr Frank Dawson addressed to the Administrative Review Council, dated 26 August 1996 and received by the Review Council on 30 August 1996.

**Oral submissions**

113. Dr Keith Horsley for the Repatriation Commission and Mr Reg Sherlock for Mr John Elgar Beale made oral submissions to the Council.

114. A submission conducted over the telephone was made by Dr Philip Sambrook.