The Longstanding Problem of Flat Feet

Major J D C Bennett
BSc, FRCS, DCH, DHMSA, RAMC
British Military Hospital, Rinteln BFPO 29

Col D G Stock
FRCS, L/RAMC
Consultant Adviser in Orthopaedics
Queen Elizabeth Military Hospital, Woolwich, London SE18 4QH

SUMMARY: The problems posed by flat feet to recruitment for the Army are assessed and the methods by which the Army has responded to the challenge over the years are reviewed.

Introduction
The problem of flat feet has plagued armies for years and caused considerable problems for those involved in recruitment. A balance must be achieved between rejecting out of hand potential recruits who could provide useful service, and enlisting individuals who cannot withstand the rigours of Army training and who must subsequently be discharged on medical grounds. Flat footedness is not a new problem, and over the years military authorities have shown particular concern, prompted often by Government scrutiny. This problem has been tackled from a variety of angles, and its study is not only interesting from an historical point of view but also bears witness to the aphorism “There is nothing new, only old problems and solutions which have been forgotten”.

Historical Aspects
The question must be addressed as to why individuals who managed perfectly well in civilian life with flat feet cannot withstand the rigours of military training. Over the years two aspects of military life, drill, in particular the position of attention, and the wearing of boots have come under scrutiny.

Long periods of standing still in an unnatural position throw unaccustomed weight onto the arches of the foot and it seems that this was realised at an early stage. Hence it can be found published in 1690: “Order . . . for the exercise of the musket – the musket being shoulder’d, the feet are to be at one step distance, the heels in a line and their toes turn’d out”.

In this position the soldier can balance his weight evenly, as his feet are a pace apart, and this at a time when “all is to be performed with a graceful readiness and exactness”.

It was also emphasised in 1739: “As soon as the word of command is given (sc. Take Care), there must be a profound silence observed through the whole battalion, the soldiers making no motions either with their head, body, feet or hands, but as shall be ordered, looking to the officer who is to give the word of command, carrying their firelocks straight on their shoulders, barrels up, muzzles high, pressing the guard to their breast, their feet a step distance, the heels in a line and their toes turn’d out”.

The nearest equivalent to “Stand at ease” appears to be “Rest on your arms”.

Things deteriorated when the position of attention was changed from the comfortable more anatomically correct stance of the feet apart to one where they were together. The position of attention with the heels placed together and the toes everted appears to date back to 1792, when the following statement can be found: “The equal squareness of the shoulders and body to the front is the first and great principle of the position of the soldiers. The heels must be in a line and closed, the knees straight without stiffness, the toes a little turned out so that the feet may form an angle of about sixty degrees. The body is upright, but inclining forward, so that the weight of the bears principally on the forepart of the feet”.

The reduction of the angle of the feet from sixty to forty five degrees took place between 1867 and 1870.

Sir Alfred Keogh KCB, Director General of Army Medical Services chaired a committee which reported in 1909 on the “Physiological Effects of Food, Training and Clothing on the Soldier”. In this report it was considered that “on both anatomical and physiological grounds the position of attention is bad; it is wasteful of energy and can only be defended as a discipline and ceremony”.

The stance was modified in favour of a position adopted in the gymnasia whereby the instruction for distributing the weight was amended. This was the amended position introduced in Infantry Training 1911.

The Great War proved a massive testing ground and allowed many doctrines to be put to the test. Audit became fashionable and the problem was brought into focus in 1924 when it was found that each recruit enlisted and subsequently discharged after a period of training cost the State on average £50. The total loss to the State by discharge of recruits on all medical grounds well exceeded £100,000 annually in 1924. The number of discharges for flat foot of recruits under training during
the year 1922-23 out of 2,233 discharged on medical grounds was 190 i.e. 8.5%.

It was considered impossible to frame effective regulations to prevent enlistment of men likely to develop flat feet. It is also necessary to distinguish between an apparent flat foot which has no effect on efficiency and the genuine flat foot which has. Evidence was produced that the large majority of recruits who developed flat feet during training could and should be saved. The Committee approached this challenge with three main lines of attack.

Diagnosis
The disability should be monitored at an early stage, and immediate notice taken of any pain or spasm. This should result in the recruit being rested for two days and then returned to a modified duty.

Attention to Boots
It was considered that the affected recruit could be helped by correction of the boot. This consisted in raising both heels and sole on the inner side by one third of an inch and extending the heel forward on the inside by three quarters of an inch. The correction should not be a patch on an insert into the leather of the sole and heel so as to become an integral portion of the boot. This boot described in 1924 was not to be regarded as a "surgical boot" but as a recognised modification of ordinary footwear — "a recruit’s boot". The authors were at great pains to point out the untoward psychological effect on a recruit of being "labelled".

Drill
It was considered that a bad effect was produced by a sequence of parades requiring long periods of standing. Advice was sought from the Directorate of Army Training and it was confirmed that the syllabus of recruit training issued with Army Order 99 of 1923 was not rigid but intended solely as a guide, and the following recommendations were put forward: "For the first eight weeks of training no recruit should be kept on his feet for more than 35 minutes at a time and the practice of stamping might with profit be prohibited."

A reference was made to the fact that this practice "is now prevalent at Sandhurst, whence it is carried throughout the Army". In October 1923 an instruction
was issued from the Physical Training Headquarters for dealing with stamping during physical training. “Smartsness need not be confused with crudity, and movements should be neat and natural”.

It was considered by the 1924 committee that “despite the increase in study and experience of military orthopaedics the incidence of flat foot has shown a marked and alarming increase. This may be due to the arrival in the Army of boys who were undernourished during the late war years” i.e. The First World War. It was felt that “a compromise in favour of ceremonial appearance is no longer possible” The Committee accordingly recommended:
1. In Section 13, Appendix 113, Regulations for the Medical Services of the Army, under the heading of “Flat Feet”, the words “or if tender parts are detected over the ligaments of the sole,” should be inserted.
2. No recruit should be discharged for flat-foot until every effort has been made to avert this course.
3. “Recruits boots” should be introduced, in several depots at first, until proved.
4. For the first eight weeks of his training, no recruit should be kept on his feet for longer than 35 minutes at a stretch.
5. The present syllabus of recruit's training should be more strictly observed.
6. Stamping on parade should be prohibited.
7. The conversion of solid floors in gymnasia should be expedited.
8. The present position of attention should be converted to the stance recommended in this report.

Modern Developments

Today we realise that we are all born flat footed, and it is only with acquisition of the upright posture that the longitudinal arches develop. It is not known why in some people the arch can be lost without any untoward effect. Certain ethnic groups tend to have flat feet, yet remain good athletes. Some of the best sprinters in the Army have been shown to have flattening of the longitudinal and transverse arches of the foot. Judgment is made on function rather than X ray appearances. It should be noted that there is no routine surgical operation on a foot with flattening of the longitudinal arch that will correct function to such a level to enable a young recruit to enlist in the Army. The new combat high boot is made of better leather and the sole has been improved considerably being made of double density polyurethane, which cuts down the heel strike. The boot comes in the usual sizes but the wider fitting boot will enable flat feet in the recruit to be accommodated more readily. This new combat high boot has an improved insole and it is hoped that in the future discharge of young recruits with flat footedness may be greatly reduced.

Conclusion

What progress has been made? Much more care is taken in assessing the medical condition of recruits today. The cost of medical discharge scaled up from the 1924 figure dictates, apart from grounds of conscience, from a purely financial point of view that this be so. Prompt specialist opinion is readily available, but perhaps the most important factor is that the various government committees do actually listen to the Royal Army Medical Corps.

REFERENCES
1. The Exercise of the Foot with the Evolutions 1690.
2. Exercise for the Foot Forces 1739.
3. Regulations for the Field Exercise 1792.
4. Field Exercise and Evolutions of Infantry 1870.