

Captain Nels O. Monserud and Medical Consideration of the Women Air Force Service Pilots: An Enduring Legacy

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The Women Air Force Service Program (WASP) was established in 1942 to train female pilots to ferry military aircraft. Out of 1606 trainees, 1074 graduated from the Avenger Field training base before the program ended on March 1, 1945. Following training, the group conducted 12,650 ferry missions in 78 types of planes, including P-51s and B-17s. During this time, Capt. Nels Monserud and his team provided not only medical care, but also conducted important research into the medical factors associated with female crewmembers. Specifically, he conducted the first studies on female pilot anthropometry and on pilot performance before, during, and after menstruation. His studies were significant since there were no existing data regarding menstruation and flying, and until his work, the careers of female pilots were constrained by regulations that required grounding during menstruation. Unfortunately, these regulations were instituted due to anecdotal information of women who died in crashes while menstruating. While most of the crashes clearly involved factors other than menstruation, it was often considered the causal factor. The regulations prohibiting flight during menses were based upon publications from some of the leaders in the aerospace medicine field.

At the Department of Commerce meeting held in conjunction with the Aero Medical Association meeting in 1930 and published in the *Journal of Aviation Medicine*, Dr. Louis Bauer read a communication from one of his inspectors regarding female pilots.¹ "I think in your capacity as examiners, in examining women applicants you should advise them that under no circumstances should they fly during, immediately before, or immediately after their menstrual period. There is no question but what a woman is more unstable at that time than at other times. I don't know of any one better fitted to broadcast this information to the woman applicant than the doctor. They will take it from the doctor when they won't take it from anyone else, and they don't appreciate it, as a rule. I think you should make it your duty, whenever you advise a woman applicant, to advise her that under no circumstances should she fly during that period. Unquestionably, it is the cause of a certain number of crashes. We found in the air races a year ago that in connection with one of the women who was killed it happened during her menstrual cycle. Unquestionably that had a strong bearing on her accident."

In 1934, Dr. R.E. Whitehead, who was the Medical Director of the Bureau of Air Commerce, stated in "Notes from the Department of Commerce: Women Pilots" that was also published in the *Journal of Aviation Medicine*,⁸ "It has come to the attention of the Aeronautics Branch that within the last six months there have been a number of serious and fatal accidents among women pilots and at the time of the accidents it has been found that they were in their menstrual period. This may be coincidence, but since we have had a number of cases we are beginning to think that it is not. Some localities in the United States have been practically

depleted of women pilots by accidents... Some women can probably fly with perfect safety during their menstrual period while others cannot. The majority of those who cannot voluntarily prefer not to fly or choose to be co-pilots during their menstrual period. However, there are probably some women who are unable to evaluate their own frailties. If they are unable to evaluate their frailties on the ground, how are they going to evaluate them in the air?"

In "Tentative Revision of Physical Standard for Aircraft Pilots" published in the *Journal of Aviation Medicine* in 1935⁷ and repeated in the CAA Medical Examiner Handbook of 1942,² it states that, "All women should be cautioned that it is dangerous for them to fly within a period extending from three days prior to three days after the menstrual period. Many women pilots have fainted when flying during this period with fatal results." Drs. Malcolm Grow and Harry Armstrong wrote in their book, "Fit To Fly" in 1942³ that "During the menstrual period women tend to become emotionally upset, and it is believed that several aircraft accidents have been due to this cause."

The Assistant Chief Flight Surgeon of the Connecticut Department of Aeronautics, Dr. Rayman Holtz, was much more supportive following his interviews with many of the female pylon and endurance racing pilots regarding menstruation. While the original questionnaires and data were lost in a flood, he concluded and published in 1941⁴ that, "In the vast majority of instances women who were free from symptoms during the menstrual period experienced no ill effects while flying.... The writer is adamant in his personal belief, however, that the female pilot who is healthy and stable in every respect and who is symptom free during menses is safe to fly during this period."

Dr. Monserud was clearly in an unusual situation since the WASPs seemed to fly without regard to menstruation—much like the earlier air racers. Under his direction, trainees were required to report to medical officers during their menstrual period. Objective and subjective data on flying grades were recorded on 430 trainees on the day before menses, during, on the day after, and 10 d following the last day of menses. Data were published in tabular form and showed slightly better progress on the day before, the day of, and the day after menstruation than on the 10th day post-menses.^{5,6} No crashes were reported related to

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menstruation and approximately 20% of all trainees were menstruating at any one time. The majority of surgeons and operations officers in the Training Command and Ferrying Division of the ATC reported that the loss of flying time resulting from physiological processes peculiar to WASPs was negligible and did not interfere with either training or dependable job performance. One of the classes lost 0.7 days per trainee per month and Love Field reported only 0.1 day lost per month for all causes. In conclusion, he wrote that "In properly selected women, menstruation is not a handicap to flying, is unaffected by flying, and does not hinder dependable performance of duty." One cannot thank Dr. Monserud enough for adding data to a topic with conclusions based only on opinion and anecdotes. I have not been able to find anywhere that the previous opinions expressed in the *Journal* were ever withdrawn. Dr. Monserud published his work in the *Air Surgeon Bulletin* and not the *Journal*.

Following the WASPs and the example of early female aviation pioneers, women have consistently made important contributions in civil and military aviation and in the space program. In 1976 women joined military pilot training classes and the first female astronauts were hired in 1978. While the Lovelace Clinic's "Mercury 13" female test subjects were not considered for astronaut selection because they were not military test pilots, the military

accepted the first female test pilot in 1989 and eliminated combat restrictions in 1991. Eileen Collins became the first female to command a Shuttle mission in 1999 and Dr. Peggy Whitson commanded the International Space Station in 2007. I think that Dr. Monserud would have been very proud.

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