



Report of the Panel of Inquiry into the death of Pamela Gower in a sport parachuting accident

9 FEB 2017

1 Members of the Panel of Inquiry

The Panel of Inquiry was instigated by [REDACTED], Vice Chair the Safety & Training Committee (STC) of British Parachute Association (BPA) on 18 October 2016. The Panel originally consisted of Ryan Mancey (Chief Instructor/Advanced Instructor; Chair), [REDACTED] (Chief Instructor/Advanced Instructor) and [REDACTED] (Chief Instructor/Advanced Instructor). [REDACTED] stood down due to work commitments in the early stages. On 24 October 2016, it was agreed that Stacey Canning (Advanced Instructor) would replace him.

2 Terms of Reference

The Panel were tasked with investigating all peripheral [including underlying] aspects following the Board of Inquiry Report into the fatal sport parachuting accident of Pamela Gower (the deceased) at Peterlee Parachute Club, Co Durham, on 10 September 2016. Pamela Gower was a person with restricted growth (dwarfism).

In its recommendations, the Board of Inquiry asked the Panel of Inquiry to consider:

- a) Whether Pamela Gower was progressed beyond her abilities, taking into account the time periods between her latter jumps.
- b) Whether a formal written risk assessment should be required for those ab initio student parachutists with special needs, who require reasonable adjustments to be made to their training and equipment etc. for reasons of body morphology (such as restricted growth), or other special needs.

The Panel were asked to consider whether or not there were any breaches of the BPA Operations Manual or the local Standard Operating Procedures (SOPs). Also, the Panel were asked to complete their inquiry in the earliest possible time and file a written report covering all aspects of the inquiry, including conclusions and recommendations as appropriate.

At the inquest into the death of Pamela Gower, held at HM Coroner's Court, Crook, Co Durham, on 13 December 2016, Andrew Tweddle, HM Senior Coroner for Co Durham and Darlington, recorded a verdict of misadventure. The Coroner issued BPA with a Regulation 28 Report to prevent future deaths (see Appendix). This required BPA to report back to him by 9 February 2017. This was forwarded to the Panel to request that their report - which is to say this report - should form BPA's response to the Coroner.

3 Investigation and interviews

The Panel held an initial meeting at Old Sarum Airfield, Wiltshire, on 2 November 2016. All three Panel members attended the meeting along with [REDACTED] (BPA Chief Operating Officer and Board of Inquiry member) who was requested to attend to provide background information. The business of the meeting comprised a discussion of the incident itself, the underlying/root causes of the accident, peripheral aspects, and the observations made by the Board of Inquiry as well as the Panel's terms of reference. The Panel decided, as part of its investigations, to visit Peterlee Parachute Club to conduct interviews with those concerned.

On 1 December, [REDACTED] and [REDACTED] visited Peterlee Parachute Club. They toured the PTO as well as the airfield and surrounding area with Chief Instructor [REDACTED]. Interviews were then conducted by the Panel with [REDACTED], and Instructors [REDACTED] and [REDACTED].

On 19 December, [REDACTED] and [REDACTED] met with [REDACTED] at Old Sarum to discuss the findings of the Coroner's inquest on 13 December 2016.

On 21 December, [REDACTED] and [REDACTED] met at Perranporth airfield in Cornwall to consider the visit to Peterlee on 1 December and the Coroner's concerns as set out in his Regulation 28 Report.

4 Observations and Findings

4.1 Equipment

[REDACTED] noted that it was possible that the harness on the deceased's equipment was pulling the back of her legs into such a position that it would make it difficult for her to stay in an arched body position. With the 'knees down' or 'flat' position seen in the video evidence throughout much of her flying on her earlier dives, recovery from instability would be far more difficult as the hips are no longer the centre of gravity. However, after watching footage taken of her flying in a wind tunnel, it is clear that the deceased was not very flexible in keeping her knees back and hips down.

This is an issue that many student skydivers face during the early stages of their development in the sport. Typically, it improves with more consistent practice of the position. The more the position is practised, the more flexible student skydivers become with regard to their hip-flexors and lower back.

Other factors to be taken into consideration are the deceased's age and her level of ability. There are times during the footage of her both in the wind tunnel and in the air that she is flying in a reasonable position. However, over any prolonged period, she seems to resort back to dropping her knees.

4.2 Wind tunnel (simulator) training

On analysis of the footage taken in the wind tunnel, it is clear that whilst the deceased is flying on her front, she has reasonable control of her stability as well as her heading and is able to turn in either direction. So to her instructor, [REDACTED], in making an assessment of the deceased's flying abilities, it would have been clear that the deceased was at an AFF level five standard. This, combined with the logbook entries and analysis of the footage from Spain, would have reasonably led [REDACTED] to such a conclusion.

Although her 'barrel-roll' practice started quite poorly, through more practice the deceased was able successfully to complete the manoeuvre without too much effort. However, this was practised *without a parachute container on her back* which would have significantly changed her centre of gravity. Whilst it is not commonplace to wear parachute equipment in a wind tunnel (for safety reasons, lest it should deploy in the confined space), it is possible to do this with the use of a purpose-made cover that fits over the parachute equipment preventing it from being accidentally deployed. Tunnel training whilst wearing parachuting equipment was not considered as the deceased was able successfully to complete the barrel-roll manoeuvre many times.

4.3 Decision for level five / check out dive

This was a joint decision between Instructors [REDACTED] and [REDACTED] and Chief Instructor [REDACTED]. Whilst there was no formal written risk assessment made, the Panel believes that an assessment was made in conversations between the three instructors that took into account the training the deceased had received in Spain, together with video footage, logbook entries, ground training as well as her performance in the wind tunnel.

4.4 Training and refreshers

It is clear that the deceased had received the correct amount of ground training and all her documentation was in order. Indeed the benefit of her training became evident when she was attempting to deploy her main canopy repeatedly on her last jump before she appeared to lose consciousness. The Panel believe that she may well have touched the main deployment handle

but due to the incredible forces and disorientation described in the analysis by [REDACTED] BPA Medical Adviser, she was unable to carry out the full action.

There has been some debate about whether or not the length of time between the deceased's last jump in Spain and her first jump at Peterlee was appropriate. Given that an assessment was made in the wind tunnel as well as the fact that she completed her level five / check out dive without any issues, the Panel do not believe that this was a major factor in her inability to recover from a back to earth position on her final jump.

The Panel therefore conclude that Pamela Gower was not progressed beyond her ability. She was able to complete the manoeuvre in the simulated environment of wind tunnel when she was not wearing any parachuting equipment; however, it would have been more of a challenge for her when wearing parachuting equipment.

The speed of the spin the deceased entered has not been seen in sport skydiving before to the knowledge of any member of the Panel. The Panel believe it to be attributable to the deceased's particular stature. As with a spinning ice skater closing in their arms and legs, a smaller body will spin faster as governed by the laws of physics. This is something that was not considered in the risk assessment when deciding whether or not the deceased should be allowed to skydive, as it had never happened before in over 50 years of the BPA analysing sport parachuting accidents and incidents. Even though her instructor was dressed appropriately to fall at a slow fall rate, once the deceased started to spin, the deceased's fall rate slowed down to such an extent that the Instructor's fall rate was higher, meaning that the Instructor fell away from the deceased.

5 Conclusions

The Panel conclude that there was no evidence of any breach of either the BPA Operations Manual or the local Standard Operating Procedures. All documentation, training, and equipment was in order and that the deceased was not progressed beyond her abilities to carry out the planned skydive. The fatal accident she suffered was a consequence of a combination of factors. The flexibility of the deceased's body was limited by her age as well as her body morphology (reduced stature/dwarfism). Also, while her equipment was considerably smaller than a standard 'student' parachute container and was modified specifically for her, the combination of her flat body position and large, heavy equipment (in comparison to her body size and weight), made recovery from instability more of a challenge. Having such short arms and legs assisting the recovery (through surface area) also proved difficult.

Whilst the deceased's training enabled her to control herself in free-fall on her front, on her back she had no control to stop a spin and emphasis is put solely on rolling back to her front. This is typical of skydive training the world over and the Panel is not suggesting that the AFF programme

should be changed to accommodate 'back-flying' (a more advanced technique where skydivers learn to have control flying in a back-to-earth position).

However, due to the risk involved with inducing a spin through instability, such as that witnessed by the deceased, the Panel believe that if reasonable heading control can be learnt through training in back-flying in a wind tunnel, it should certainly be considered a requirement if someone with dwarfism or non-standard body morphology wishes to learn to skydive. This could at least prevent a spin situation were they to end up on their back before barrel-rolling over. With wind tunnel training, flying on the front must be learnt first, then flying on the back, which can take some time and expense and could deter some people. From a safety and progression perspective, learning those skills in the tunnel; before even boarding a plane, could be beneficial for the student.

6 Recommendations

The Panel recommend that:

For (non-tandem) skydive students who have non-standard body morphology (such as caused, for example, restricted growth), disabilities or other special needs:

- 6.1 A formal written risk assessment should be made.
- 6.2 Special consideration should be given to wind tunnel training before any skydiving takes place, to include consideration of such training whilst wearing parachuting equipment, and heading control in a back-to-earth position. This could be seen as a very robust method for those wishing to skydive. Skydiving is an extreme sport and we should never stop striving to provide new and suitable methods of instruction for our students.
- 6.3 At the discretion of the Chief Instructor, two instructors be used during AFF levels 4 - 7. (One instructor flying some distance above in order to assist if slow fall rate becomes an issue.)

Appendices

Appendix - HM Coroner's Regulation 28 Report to prevent future deaths

23 January 2017