Protocol for Blood Pressure Measurements

BP-2000 Blood Pressure Analysis System™

The following recommendations will help enhance the reliability and reproducibility of the blood pressure measurements you obtain with the *BP-2000:*

1. **Train the animals for a period of 1 to 5 days** prior to starting your experiment by performing daily blood pressure measurements. The training period is adequate when the results become more reproducible, and the measurement sets give smaller systolic standard deviation. The animals also produce less feces when they are trained.
2. **Perform a minimum of 5 preliminary measurements in each session**, in order to allow the animals to warm up sufficiently to produce a good blood flow in the tail. This also allows them to get accustomed to being in the specimen holders before the actual measurements begin.
3. **Perform 10 to 20 actual measurements** in each session.
4. Do the measurements at the **same time each day**.
5. **Measurements should be made regularly**, at least 3 days a week to obtain good results.
6. If mice are kept in a different room from which measurements are made, **take the mice to the measurement room one to two hours before making measurements**.
7. It is very important to **handle the animals gently** in order to keep them as calm as possible.
8. **Keep the room quiet, with no loud talking or music** playing before or during measurement sessions.
9. **Use the smallest size holder** that will comfortably hold the mouse or rat. If the holder is too large, the animal may move excessively and make it difficult to obtain good measurements. **If the animal can turn around in the holder – so that you see its nose at the tail hole – the holder is definitely too large!**
10. To get good pulse signals, it is essential that the **tail is at the bottom of the V-shaped groove in the sensor**. To accomplish this, push the tail cuff stem into the grommet through which the blue cuff tube emerges, and tape the distal part of the tail to the sensor's flat part (closest to the front of the platform).
11. **Systematically rotate the mice or rats through all channels**, to help average out channel-to-channel variations in cuff elastic. This is very important.
12. **After changing the cage, wait at least 24 hours before making measurements.**
13. **Consider using plastic wrap** (for example, Saran® wrap) beneath the holders, and changing when you put new animals on the platform. **This is especially useful when measuring males after females have been on the platform**.

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14. **Do not leave the animals in the holders for more than about 30 minutes**. It may be possible to leave them in longer, but you need to verify that they are healthy and calm.
15. **Examine the pulse waveforms during the detecting pulse phase to verify that the pulse amplitude is sufficiently large**. If the amplitude is too small, be sure that the temperature is set to at least 36 C. Also, be sure to use preliminary measurements to allow the specimens sufficient time to become warm. Do not increase the platform temperature until the animals have been on the system for at least ten measurements.
16. Mice often start giving good pulse signals within a few measurements. However, **it generally takes longer with rats due to their large body size**. In fact, it can take from 5 to 12 minutes for rats to become warm enough to give good blood flow to the tail, and thus to produce good pulse signals. Thus you may want to put them on the platform for a few minutes prior to starting measurements.
17. **When measuring rats, do not place the cuff on the part of the tail that is very close to the body, where the diameter is changing rapidly**. Instead, adjust the position of the holder so that the tail diameter is more constant where it passes through the cuff.
18. **It may useful to preheat rats in their cage** with a heat lamp, or with some other method, prior to putting them on the *BP-2000* Rat Platform.

If you have any questions, please contact Visitech Systems by phone (919-387-0524), or email (techsupport@visitechsystems.com), and we'll be glad to help.

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