



It Takes a Lot of Nerve: A Two-Level Case Study Designed to Teach the Physiology of the Nervous System

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Scenario 1

Amanda had been on the go the entire day. Her busy schedule had included a job interview, a class presentation, and an unmerciful physics exam she would rather not discuss. Once home, she was determined to head straight for bed, but there was one minor complication. She hadn't managed to eat anything in the midst of all the day's activities. While scrambling to put together a fast and easy meal at home, she inadvertently touched one of the hot burners on the stove. Fortunately, she reacted by jerking back her hand before any damage was done. A short time later Amanda felt pain on her hand where it had been exposed to the hot burner. After telling her mother about her eventful day and her narrow escape, Amanda's mother asked her about her hand. Amanda replied, "I'm fine, but it could have been much worse."

In this relatively simple event involving the hot burner, several neural pathways have contributed to the response of Amanda removing her hand from the potentially dangerous hot burner. Can you explain what happened?

Scenario 2

It had been a busy week for Amanda. She had taken three exams, and as if that wasn't stressful enough, her sister was ill and Amanda had to spend much of her time helping out at home. By the end of the week, Amanda decided to go to the beach for a walk and some genuine relaxation. The day was warm and Amanda took off her shoes so she could walk barefoot and feel the sand between her toes. Halfway down the beach, she stepped on something extremely sharp and withdrew her foot in pain. As Amanda hopped around the sand on one foot, rubbing the other to ease the pain, she decided to put her shoes back on.

This incident is a simple event and may have happened to you. In terms of the neural pathways, this reaction requires a complex neural net. Can you explain what happened?

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