1. If perceived temperature were the same as actual temperature, the following plot would be a 45° straight line, at least over the relevant physiological range:

```
  40  
  30  
  20  

perceived temp

  20  
  30  
  40

ambient temp °C
```

In fact, your perception of cold is colder at cold temps and warm is warmer at warm temps. The idea is that you don't care about temp around your preferred range, but outside of this range you are acutely (= extra) aware!
2. T-coders fire APs 1:1 with the zero-crossing of the EOD.

\[ \text{\textbf{Diagram}} \]

\[ \text{? APs at positive zero-crossings.} \]

\[ \text{\textbf{Let's see...}} \]
\[ 1000 \text{ Hz} \equiv 1 \text{ ms} \]
\[ 500 \text{ Hz} \equiv 2 \text{ ms} \]

\[ \text{\textbf{Answer}} \]

3. Well... yes and no!

First the No: The African fish have a corollary discharge - a neural signal that informs the sensory processing part of the brain when the motor side commanded an EOD. This makes the time reference against which latency can be measured.
The S. American e-fish don't have this connection in their brains...

so no latency coding.

... and for the yes: In theory, you could use the T-coder signal from a part of your skin surface receiving only your own eOD. This "pure" signal would then be the time reference. Other parts of your skin receiving a mixed you/neighbor eOD (or just a neighbor depending on pulse collisions if a pulse-type gymnotid) would vary in phase relative to amplitude.
4. T-units only mark the time of occurrence of the fish’s own EOD. This is typically strong and does not require high-sensitivity detectors. Since the receptors are untuned, they will pick up all the energy of the EOD. They sacrifice signal/noise ratio, but do get plenty of signal to drive them.
5. Pain

- thermal (burning)
- mechanical (pinch)
- soreness (in inflammation)

6. Wide dynamic range means the nociceptor responds to mild as well as strong stimulation. Often this profile is due to multimodal sensitivity – so mechano, thermo, etc. drive the neuron.