A state of emotional or mental strain, experienced due to internal or external circumstances is referred to as psychological stress. Under this stress, the human body releases complex hormones and chemicals such as adrenaline, cortisol, etc.

A prolonged exposure to stress may increase the risk for obesity, metabolic and cardiovascular diseases, diabetes, polycystic ovarian syndrome, as well as cancer.

Numerous applications exist that allow users to log meals, monitor total calorie intake, log sleep timings, log physical workouts and overall nutritional value. However, most of these require users to manually log this information. Both, over-reporting and under-reporting has been identified as problems with user-entered data, stimulating research to automate this.

We propose the following research:
Explore machine learning methods for automatic stress monitoring on edge devices by
(1) Analyzing body temperature, rate of motion and sweat during physical activity [1,3].
(2) Analyzing the sleeping patterns and physiological changes during sleep [2].
(3) Advising various short-term and long-term solutions for stress control by taking in the effects of different stressors’ in the order of their relevance, effect and accuracy to account.

**Analyses**

<table>
<thead>
<tr>
<th>SR (dB)</th>
<th>RR (bpm)</th>
<th>HR (bpm)</th>
<th>A (steps /min)</th>
<th>H (mg/ml)</th>
<th>T F</th>
<th>Stress State</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-80</td>
<td>17-22</td>
<td>54-64</td>
<td>50-75</td>
<td>9-11.9</td>
<td>98-100</td>
<td>Low (L)</td>
</tr>
<tr>
<td>80-89</td>
<td>23-25</td>
<td>65-70</td>
<td>75-100</td>
<td>12-15</td>
<td>90-97</td>
<td>Med (M)</td>
</tr>
<tr>
<td>90+</td>
<td>25+</td>
<td>70+</td>
<td>101-120</td>
<td>15-20</td>
<td>80-90</td>
<td>High (H)</td>
</tr>
</tbody>
</table>

In the notification bar: Generate workout plan, meal plan, sleep schedule, display stress relief paintings, play music in the background, suggest videos to play, quick 2 min breathe exercise, display positive and inspirational quotes, nearby therapy dog's location, automatic slide show of photos from gallery.

**Value Proposition**
(1) Allow automated stress monitoring of the soldiers by a wearable, and
(2) Notify the doctors on the battle readiness of the soldiers. For example, based on stress level of soldiers, next physical activities and meal can be advise. A soldier can be advised to take rest before resuming deployment again.

**Novel Features:**
(1) Smartwatches and fitness trackers tack on stress-related features as part of a variety of monitoring activities around a wrist.
(2) Targeted wearables for stress tracking: smart jewelry to head-worn devices.