We would like to thank the reviewer for their fast work as well as the constructive critique of our paper. In particular, the excerpt is quite motivating and always enjoyable to read. In this answer, we would like to discuss how we changed our paper based on this critique and where we see limits in applying these changes.

From our point of view, the critique of the reviewer can be divided into 2 main areas: First the context on a geo-level and second on the used heat stress model / impact of temperature.

The reviewer stated that we should mention the context specific limit of our study:

* *The author/s should mention that the study is context-specific. In the majority of the world distances are too far too walk or cycle for basic amenities and services. For Europe, the study is workable, not for outside Europe.*

We agree with the reviewer. We added the limitations in our statements about the generalization of our study. This was done in small additions of the areas where it can be applied and the examples and explicit in a new sentence at the end of the introduction (page 2, lines 1-2). Here we state that the method was created for European cities. We hope that this shows clearly the limitations of this study and potential future work.

Regarding the different heat stress models which measure the impact of temperature on humans, the reviewer had three remarks. These consist of how the urban heat island effect effects human health, the heat budget model of the human body as well as the incorporation of different effects such as the mode of movability and other environmental factors:

* *Since the framework for the paper is based on the urban heat island effect I feel the author/s need to spend a bit more time explaining this in the introduction. How, for example, exactly does the effect impact health? How long, for example, must one be exposed to heat before it has an effect? Is it age, gender dependent?*

Regarding the heat island effect, we added a brief description of the UHI effect and its causes into the introduction (page 1, lines 32-35). In Addition, we added a statement how the UHI effect impacts health (page 1, lines 35-37). That’s mostly because people living in urban areas are more frequently and longer exposed to high ambient temperatures.

How long someone must be exposed to heat, depends of several factors like their ability to adapt to high ambient temperatures or the activities performed. The ability to adapt to high ambient temperature in turn, is depending on the physical strength and fitness and therefore age and existing diseases like high blood pressure, heart, kidney, liver or metabolic diseases are important risk factors. In regard of the influence of the gender on the vulnerability the findings are indecisive (Hübler, Klepper, & Peterson, 2007; Basu & Samet, 2002). In the introduction, we added a short statement that the time someone must be exposed to heat depends on the ability to adapt to heat as well on the acidities performed (page 1, lines 25-27).

* *More information is required about the heat budget model for readers not familiar with this particularly Steadman’s heat index. What does it consist of? How was it developed? How was it constructed?*

We agree with the author that a short description of the heat budget model and Steadman’s heat index would be a useful addition for the readers. So, we extended the related work section with a short description of the heat budget model (page 2, lines 17-20) and of Steadman’s heat index (page 2, lines 29-35) as measure for heat stress danger. However, we believe that a detailed description how the heat index was developed is out of the scope of this work and cannot be appropriately be described with in the word limit. In this regard, we to point the interested reader to literature referred in our paper.

* *Finally, how does the approach account for changes in seasons? Sunlight hours? Mode of movability (i.e., walking, jogging, cycling)?*

Regarding the impact of other modes of movability or environmental factors, our model does not account specifically for these factors. That are retraction of the relative simple thermal comfort measures – temperature and heat index – which we are using in our model. Those measures are used because they could be applied with the available meteorological data (air temperature and humidity) and can relatively easy be computed. Both issues can be addressed by using a more complex thermal comfort indices. As already written in the conclusion, the implementation and comparison of those indices would be an interesting addition, but is out of the scope of our current work and could be an area of further research. To make it clearer that additional environmental factors as well as the mode of movability can be addressed by more complex indices, we made a short addition to the conclusion (page 12, lines 31-33).

In respect of the modes of mobility we added a statement (page 2, lines 33-35), that Steadman´s heat index is calculated by assuming that the human walks at a speed of 5 km/h (1.4m/s). We used that as assumption for our model as well, as we motivate our work by typical walking tasks. To make our assumption clearer, we added a short statement to the evaluation section (page 8, lines 28-29).

Taking different modes of movability into account would be an interesting area for future research. To considered different mode of movability not only the speed – which has an influence on the time a person is exposed heat – must be considered but also the different internal heat production caused by e.g. jogging or cycling. That can be address as well by a more complex thermal comfort index.

One such index could be the universal thermal climate index UTCI (Jendritzky, et al., 2010). In Addition to Steadman’s heat index the UTCI takes the wind and mean radiant temperature in to account. Especially the mean radiant temperature is important in this context, because it is a single measure for the human-biometeorological influence of short- and long-wave radiation flux, including direct and reflected solar radiation (Matzarakis, Rutz, & Mayer, 2009). Furthermore, other factors like closing or the internal heat production caused by different activities are considered by the UTCI.

We restricted the used index to be dependent on very few meteorological parameters as possible to be easily reproducible and applicable. The more complex thermal comfort indices use parameters which are often not available and we therefore did not use them in this study.

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