Remote Presence in Nature through Virtual Reality: A Pilot Study on the Mental Well-Being of Older Adults
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**INTRODUCTION**
Alarming trend: High rates of mental disorders among the elderly population
- 85.9% of the 65 and older population living in group quarters reside in skilled-nursing facilities
- Institutionalized living arrangements increase risk of developing depression
- Insufficient depression management in nursing homes

Previous studies have shown the mental health benefits of nature sojourns.
- Reduction of stress & anxiety
- Improvement of overall emotional well-being

Virtual reality (VR) nature sojourns as a new form of non-pharmacological intervention for mental well-being of older adults.

**ECORIFT & BRIDGING ACCESSIBILITY**
- Immersive VR experiences of nature preserves (U.S., Mexico, and Germany)
- **Sound**: Ambisonic field recordings displayed in dynamic 3-dimensional auditory cues
- **Image**: Fixed 360-degree photographic panoramas
- **Head-tracking technology** captures real-time head movements and matches auditory cues in accordance to the spatial coordinates
- Allow people with physical limitations to journey into remote natural environments

**METHODS**
Recruited 10 participants aged 50 and above
- Participants experienced VR for 15-min. once a week, for a total of 3 weeks
- Randomly divided into automatic & manual modes of virtual nature visits
- Collected surveys on participants’ feelings & thoughts
- Measured participants’ blood pressure & heart rate

**RESULTS**
Users’ Average Blood Pressure Before & After the VR Experience
![Graph showing blood pressure changes](image)

**CONCLUSION**
- Mean Arterial Pressure of 8 out of 10 participants decreased after immersion in VR environments
- Most VR users reported more positive than negative sensations
- Automatic mode users found the VR more enjoyable
- Positive correlation between sight/sound credibility & overall enjoyability
- Negative correlation between how frequent the user visits nature per year & overall enjoyability of the VR

**SELECTED REFERENCES**

**SONIC FUSION**
- Visual & audio cues
- Touch (sense the heat of the sun)
- Smell (catch a whiff of the river’s scent)