

Bridge



This Newsletter aims to promote communication between schools and the Student Health Service of the Department of Health

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Editorial

Continuous improvement in technology has made 3D film and 3D television programme available. It rewards our life with more advance visual experience. But at the same time, we should be aware of the risk factors of 3D films when we are enjoying them.

In this issue, we would like to provide some information on "Evolution of Binocular vision", "Principal of 3D Films" and "Common Side Effects of Viewing 3D Films". Most important, we would like to enhance readers' awareness on taking necessary precautions. We hope our readers could enjoy 3D films as well as keep our eyes healthy.

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Health Decoding

Optometrist: Lam Kin Shing, Wallace Cheung, Rita Wong, Roy Wong

Introduction

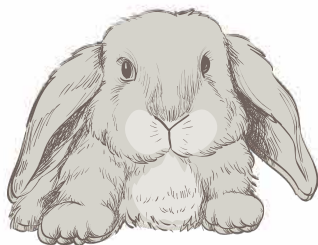
3D movies are becoming more popular nowadays. The brilliant box record of the 3D movie “Avatar” has led to the fast development of 3D technology. 3D technology not only affects the film industry but also extends to home televisions, video game products and many other goods. It certainly enriches our visual perception and gives us entertainment.



Evolution of Binocular vision

Mammals have two eyes. Some prey animals, e.g. rabbits, buffaloes, and sheep, have their two eyes positioned on opposite sides of their heads to give the widest possible field of view. For these animals, their eyes often move independently to increase the field of view but they do not have the ability to judge the depth of focus of the objects accurately.

Other predatory animals, e.g. human beings, eagles, wolves, and snakes etc., have their two eyes positioned on the front of their heads, allowing the overlapping of fields of views of the left and right eyes creating good binocular vision (stereopsis). Thus these animals have the ability to judge the position of objects more accurately.



Two eyes positioned on opposite sides of their heads



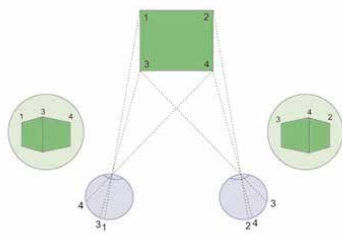
Two eyes positioned on the front of their heads

The Effects of 3D Movies to Our Eyes

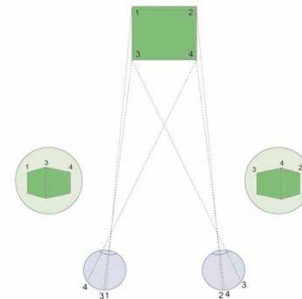
Binocular Vision (Stereopsis)

Stereo vision, or 'Stereopsis', is a result of good binocular vision, wherein the separate images from two eyes are successfully combined into one 3D image in the brain.

The impression of depth is perceived when an object is viewed with both eyes by someone with normal binocular vision. Binocular viewing of an object creates two slightly different images in the brain because of the different positioning of the eyes on the head. These differences give information to the brain for calculating the depth of the object, thus providing a major means of depth perception.



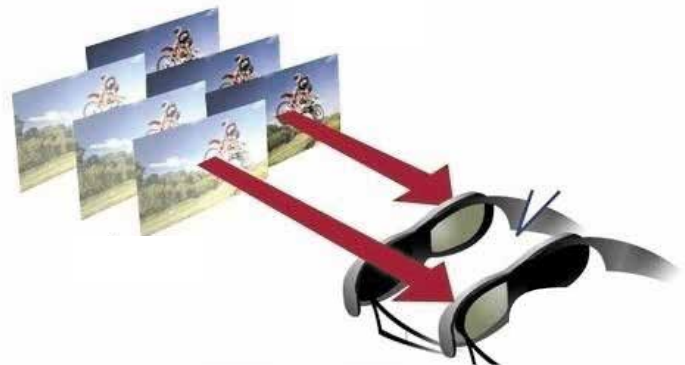
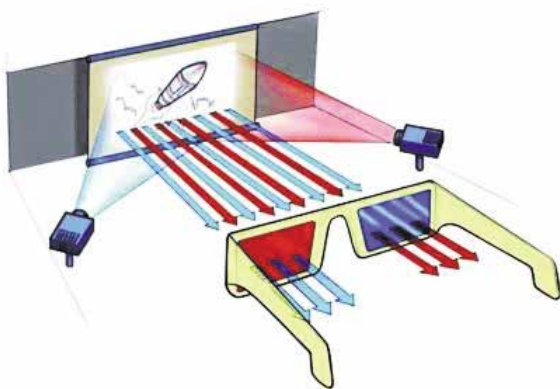
The greater the visual disparity,
the closer the object



The lesser the visual disparity,
the farther the object

Principle of 3D Movie

Unlike general movie, when shooting a 3D image, two cameras at fixed viewpoints are used to capture separate images of the same object from slightly different angles.



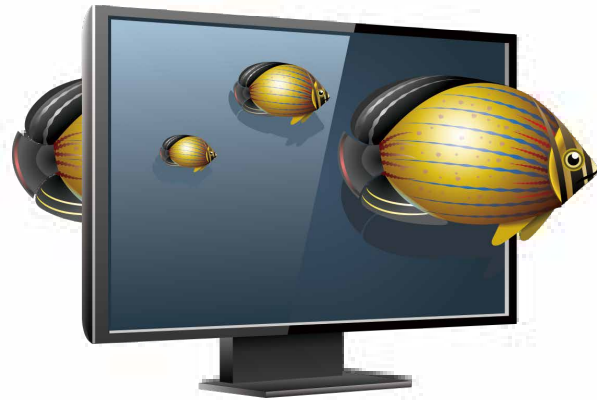


Health Decoding

When played back on a plano-stereoscopic display, the image taken by the left camera is shown only to your left eye and the image taken by the right camera is shown only to your right eye through the 3D eyeglasses. Your brain then fuses these two images to give you a stereoscopic image.

Common Side Effects of Viewing 3D Movies

- * The eyes get dried and tired easily.
- * Long exposure to 3 D movies can reduce vision, or may even cause dizziness, headache or nausea. Pregnant women, elderly and people who are drunk or exhausted are not encouraged to watch the 3 D movies.
- * Viewing 3 D movies is more tiring than watching TV. Children may feel uncomfortable and they should be accompanied by adults when viewing such movies.
- * It may trigger latent squint.
- * The flashes of the images may induce the attack of stroke or epilepsy for patients having these diseases.

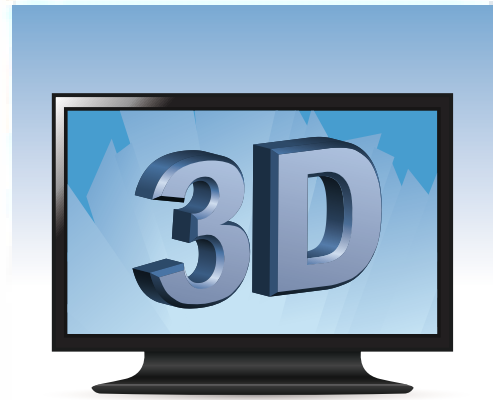


Precaution

- * Choose a seat with greater viewing distance from the screen. It should be at least 15-20 meters from the screen.
- * Rest and relax your eyes intermittently when viewing the 3D movie.
- * Select theaters with good video facilities.
- * People with shortsightedness, long-sightedness and astigmatism should have their corrective glasses on before wearing the 3D glasses for special effects.
- * For regular contact lens users, it is better to wear contact lens rather than spectacle if the difference between two eyes are greater 2.5 Diopter.
- * If you have eye coordination problems, you should take a break when you feel tired.

- * People over the age 40 and with a family history of glaucoma should avoid staying in dimly lit environment for too long. They should take a rest of 5 minutes under normal lighting for every 30 minutes exposure of 3D movie.

Eye practitioners suggest that it is best to check your eyes first before watching 3D movies, as this may cause headache. Under normal circumstances, our brain can regulate some minor eye problems. However, when viewing 3D movies, our eyes and brain require extra effort, which may cause headache.



Conclusion

Stereopsis is a complicated but interesting visual ability. It requires the coordination of the two eyes and the accurate interpretation of the images at the visual cortex of the brain. Stereopsis helps us to judge the depth of objects and distances between objects more accurately. However, we do not notice its existence very often.

We need to wear Polaroid 3D eye glasses to generate stereoscopic views when watching 3D movies. The 3D eye glasses help us receive 2 different images from the eyes so that the visual cortex of the brain can generate the fusion of them and produce a stereoscopic image.

Though 3D technology brings us entertaining stimulations, it has certain side effects to our health. We have to make extra effort in focusing and coordinating the mobility of our eyes. People who are weaker in these areas may experience blurred vision, double vision, dizziness, headache or nausea. Moreover, people with eye coordination problems like squinting or amblyopia may not be able to see the stereoscopic view when watching the 3D movies with the 3D eye glasses. Therefore, it is best for them to have an eye examination first before going for the first 3D movie or buying a 3D television.



My view on 3D Film:

It is so real!
But I felt dizzy
and hard to
concentrate after
watching it.

Very dynamic,
it's good.

Lively and
interesting! But
better not watch it
too often, it is bad
to the eyes.

I felt dizzy,
nauseous
and have a
headache.

I became dizzy
and got tears
in my eyes

Shocking!
Awesome!
The 3D film lingers
in my mind.

Long hours of watching
3D movies stresses our
eyes and might worsen
our eyesight.

Very exciting! However,
it was not comfortable
to wear glasses while
watching it.

Bridge Chats

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Last night I watched a 3D film. It was excellent! The aeroplane was flying towards me as if it was crashing into my face.

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My mom did not think so. She felt dizzy and nausea as if she got motion sickness. Her eyes were very uncomfortable.

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Elderly people, people with Presbyopia or dry eyes should not watch 3D films.

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Oh yeah! It's very exciting but I felt tired.

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If you want to enjoy the film, you should have adequate sleep. You should also apply eye drops prescribed by doctors before watching 3D film.

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Oh! Thanks!

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After watching the film, you better not use your smart phone. You should look at distant objects to let your eyes have a good rest.

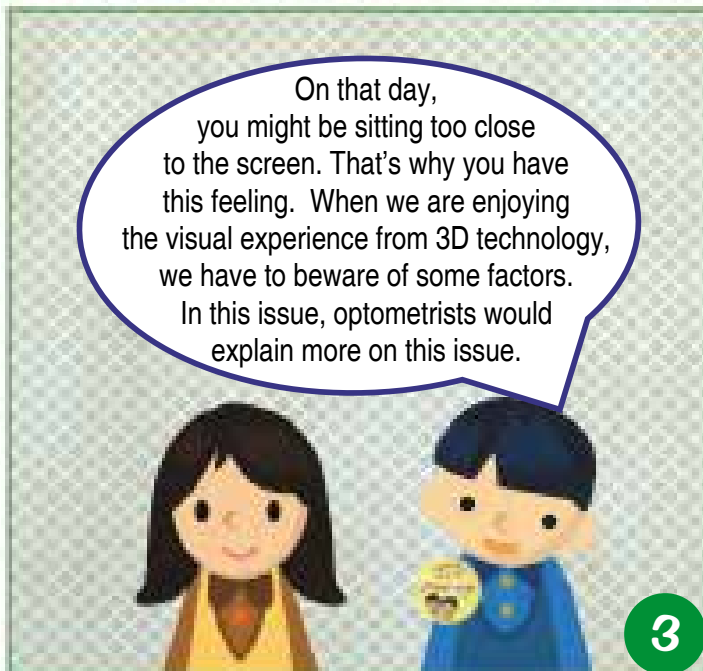
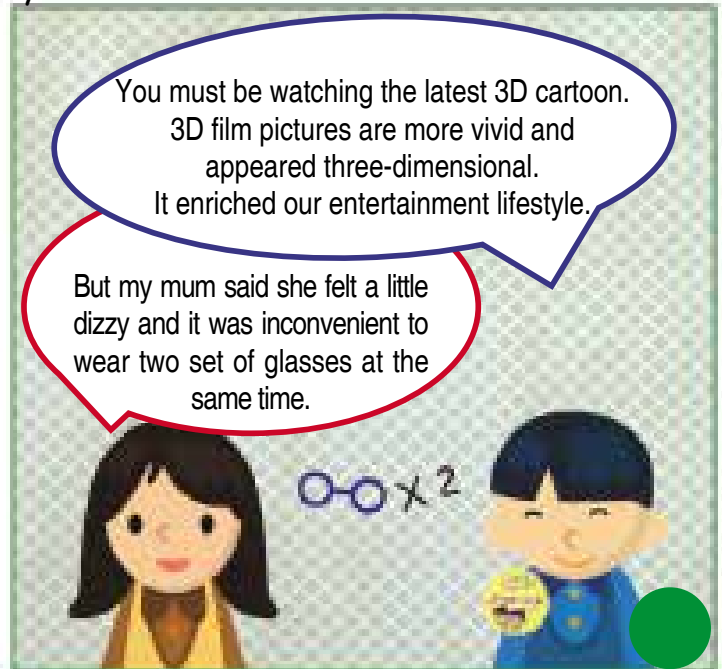
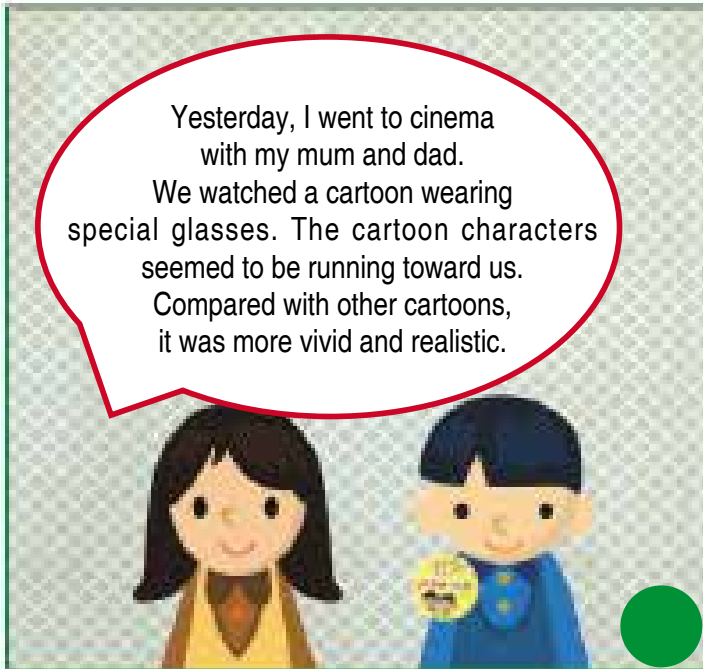
+852 1234 5678 Tim

Oh! Let me tell my mom so that we can watch 3D film together.



Junior Health Pioneer

The content of this issue is the sharing between Yuen Yuen and Junior Health Pioneer about the experience of watching 3D film with their family.



For enquiries of student's health problem, please write to "Health Box"

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