

1 雪国の盲学校の課題として

1 年の三分の一を雪とともに生活しなければならない北海道だけでなく、雪国といわれる本州の盲学校においても、児童生徒がその土地で生活できる安全な雪道歩行の知識と技術をいかに身に付けさせるかが課題となっている。

2 スノーチップの開発と雪道パタンの抽出

私は、安全な雪道の歩行を児童生徒に確保させる目的で、次の 2 点について研究した。

(1) スノーチップの開発

軟らかい雪の中に、白杖がズブズブ突き刺さらないようなアタッチメントを開発するため、石付にプラスチックボールやピンポン球など色々な物を付けてみた。

その結果、理科の実験で使うゴムスポイトが、雪道路面条の情報を的確に捕らえることが分かった。

このゴムスポイトを視覚障害者生活用具専門店ジオム社の畑岸社長がスノーチップと名付け同社で取り扱ってくれている。

(2) 雪道パタンの抽出

3 年間に渡り、同じ場所の雪道を継時的に写真で記録し、それに基づいて降雪時期を 3 期に分けた。

○降雪初期

太陽熱や車の交通によって、アスファルトなどの路面が出るが、道路の両端にはシャーベット状の雪が残る。

○本格的降雪期

歩行者が通り抜けるための出入り口を持つ交差点パターンや、車道と歩道を隔てる道路パターンなど特有のパターンを呈する。

○融雪期

凍結した歩行路面と、アスファルトが露出した車道の組み合わせが基本になる。

3 雪道歩行をより安全にするための今後の課題

(1) 雪を克服し、逞しく生きる意欲や態度の育成

(2) 雪国の盲学校の相互連携による指導プログラムの確立

(3) 吹雪や大雪の後でも、確実に環境が把握できる電子機器（日本ライトハウスのソニックガイド、横浜訓盲院のトライセンサー等）の手軽な入手など

Comment

A special forum for individuals to respond in detail to material published in the *Journal of Visual Impairment and Blindness* or to raise issues which relate to the specialized field of work with blind and visually handicapped persons. Contributions should be 350-1000 words in length.

Winter Traveling in Hokkaido Land Japan

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Translated by Hitoshi Shintani

Hokkaido, the second largest island in Japan, is located in the far north of the islands: at 45 degrees latitude, and 138 degrees longitude, it is covered with snow for six months of the year, from November to April.

As a trainer for winter traveling for 10 years in this area, I have developed some

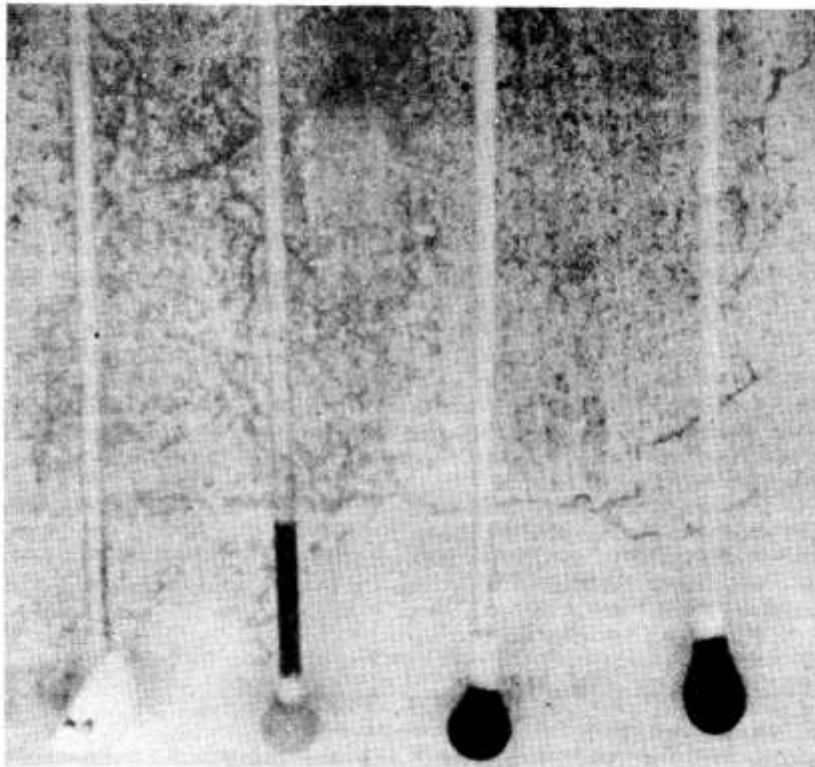


Figure 1. Cane tips modified to cope with winter conditions. The plastic tips found on the two canes on the left were too slippery for winter use. The two canes on the right were modified with the addition of rubber tips.

systems which may be of interest in similar climates.

1. Attachment for white canes: to prevent the tip of the cane from penetrating snow, I invented several attachments which enable the blind person to walk easily, even swiftly, through the snow. These attachments will not penetrate the snow; can slide on the snow; and can be taken off and put on easily.

No. 1 and No. 2 cane (Figure 1) came in 1971. But it was made of plastic and was too slippery. In 1972, I cut the end of the "spuit" made of rubber and put it into the tip of the cane, developing Number 3 and 4. These have proven very resistant to the snow.

2. Classification of snowy roads by progress of the season:

a. Early stage (end of November to

the beginning of December): From 10 cm. to 15 cm. of snow during the night melts within the next day. More than 20 to 30 cm. of snow requires several days to melt. Different classifications apply to parts of the road for cars and parts for pedestrians; a sidewalk is always classified as a clear path (Figure 2).

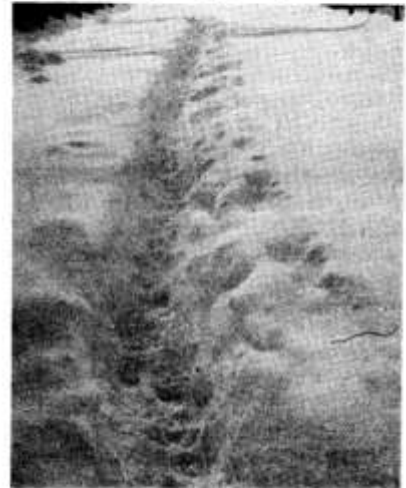


Figure 2. Sidewalks, designated as "clear paths" in Hokkaido, are usually kept somewhat clear of snow.

b. Middle stage (mid-December to mid-March: In this period, I divided the snow roads into five groups:

- (1) crossing: from a wide road to a wide road,
- (2) a crossing: from a wide road to a narrow road (Figure 3),



Figure 3. An example of a street intersection where a wide road becomes a narrow road.

- (3) a crossing: from a small road to a small road,
- (4) intersection of a wide street (Figure 4), and
- (5) intersection of a narrow street.

Knowing the type of crossing one faces helps determine the technique — and sometimes the route.

c. Late stage (end of March to the end of April): The surface of the road is



Figure 4. A wide street intersection of a type of often encountered in Hokkaido.



Figure 5. During April, much snow has melted exposing road surfaces, yet many mountains of cleared icy snow still must be navigated.

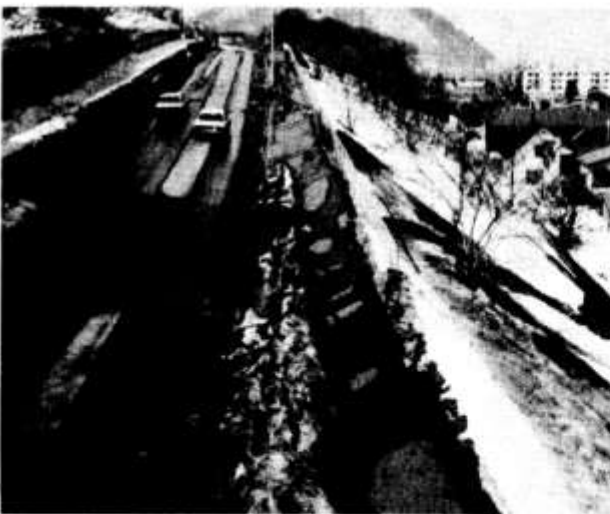


Figure 6. In March, much snow has melted on the sunny side of the road.



Figure 7. By May, snow has almost completely melted, and the road's lines are redefined.

exposed except for mountains of frozen snow (Figure 5), icy-hard and dangerously slippery. Snow which on a sunny day might melt into sherbet now freezes at night. Gradually this snow melts, the surface of the road can begin to be scraped by the cane's spike, and dirt mountains piled at the side of the road replace the frozen ones.

3. Classification of snowy roads by time of day:

- a. New-snow stage (from midnight to six o'clock in the morning): existing snow is hard and well-trod; new snow covers it only lightly.
- b. Treaded snow stage (from 6 in the morning to the noon): as the road is narrow, passable portions may change as snow is removed.
- c. Stable snow stage (from noon to . . .): roads revert to the first stage pattern.

4. Changes in the roads between December and May:

- a. December: snowfall of 30 cm.,
- b. January: snowfall of 100 cm.,
- c. February: snow sometimes melts and the sides of the road turn black,
- d. March: snow melts on the sunny side of the road (Figure 6),
- e. April: snow is completely gone from the sunny side and is starting to melt on the other side, and
- f. May: snow is gone; redefine the lines of the road (Figure 7).

5. Cane techniques for traveling on snowy roads: it is necessary to master "slide technique" and "guide technique," and to use "diagonal technique" roads.

When walking at the edge of the road using the "guide cane technique," they must angle the cane upward by 20 or 30 cm. to the sides of buildings. This keeps the sense of direction constant, and prevents walking into the road in a snow storm.

6. Training for winter traveling:

- a. By using pictures made of thermo-form, trainers can instruct trainees on the characteristics of the previous winter;
- b. Trainees check the outside environment themselves against the pattern of the thermo-form.

Cane and street-crossing techniques are taught only after basic picture of the environment has been built up for each student.

7. Training with the Sonic-Guide™ for snowy roads:

- a. Use of summer landmarks
- b. Use an environment which is similar to the inside of a building (Figure 8)
- c. Use a crossing road whose entrance is clear.

8. Inside the city center and inside buildings: Trainees must take off the rubber attachment to the cane (Figure 9)—



Figure 8. When training with a Sonic-Guide™, the use of an environment similar to the wide expanses found in the inside of buildings, such as large cleared snow areas, is recommended.



Figure 9. As the climate warms, trainees may often find it useful to remove the rubber tip from the cane to navigate inside buildings, on cleared sidewalks, and so on.

this means carrying a waterproof bag.

These are the ways I train my students to travel safely for six months of every year in Hokkaido land Japan. I would like

to hear from readers in other winter climates about special adaptations and techniques they have discovered.

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Journal Index Available Soon

The index to Volume 78 of the Journal of Visual Impairment & Blindness is current being compiled. Watch for it this March.

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「スノーチップ 冬期間の子どもたちの防寒具」

私は、昭和45年に北海道札幌盲学校に赴任以来、札幌地区で子どもたちの歩行指導などに携わってまいりました。

当時は、まだ雪道の白杖歩行に関する技術なども十分に開発されていませんでした。このため、No.53（下の囲み内容）でお伝えしたように、旭川市や金沢市、豪雪で有名な高田市にも出向いて実験を重ねて研究を進めてまいりました。

この時に、雪道の独特なパターン抽出とともに、子どもたちが使用する防寒具などについても工夫をしておりましたので、その内容をお伝えします。

1 帽子について

視覚からの情報入手が十分に行えない場合、聴覚や皮膚などからの情報に頼るしかありません。雪道では、自動車の車輪と路面との摩擦で生じる音情報が格段に低下し、車の交通音が得にくい状況が常となります。

降雪時には、雪の吸音効果も付加されさらに得にくい状況になります。

したがって、帽子をかぶらない方が多くの聴覚情報などを得ることができます。帽子をかぶる場合は、耳や頬を覆い隠すフード状のものは避け、聴覚情報が得やすいレシーバー型の物を着用する方が安全性が高まります。

2 手袋について

白杖からの情報を手のひらに円滑に伝えるためには、分厚い手袋やボッコ手袋（親指と他の四指の二つの分かれた手袋）は避け、できるだけ薄い手袋を用いることが必要です。

3 靴について

路面変化の情報は足裏から入手します。このため、靴の裏底は滑りにくくかつ足裏情報の得やすい、柔軟な軟質ゴム系の靴裏が良いと思っています。

またスパイク付きの靴も良いのですが、雪がない時はスパイク部分を取り外さなければ、マスキングノイズ（交通音の把握を邪魔する音）を自ら作り出すこととなりますので、路面状況に応じた留意が必要になります。

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